

ABSTRACTS

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### 2300. Single Mothers in Russia: Household Strategies for Coping with Poverty

Michael Lokshin, Kathleen Mullan Harris,  
and Barry Popkin  
(March 2000)

*Because of the decline in government assistance that accompanied economic reform in Russia, single mothers there — facing a greater risk of poverty — are increasingly choosing to live with other adults or relatives.*

Lokshin, Harris, and Popkin describe trends in single parenthood in Russia, examining factors that affect living arrangements in single-mother families. Before economic reform, single mothers and their children were somewhat protected from poverty by government assistance (income support, subsidized child care, and full employment guarantees). Economic reform in Russia has reduced government transfers, eliminated publicly subsidized preschool care programs, and worsened women's opportunities in the labor market. The loss of government support has eroded family stability and left single mothers at increased risk of poverty. Over the last decade, the proportion of households headed by women has increased rapidly, raising the risk of poverty. Single-parent families now represent nearly a quarter of all Russian households.

Using seven rounds of data from the Russian Longitudinal Monitoring Survey, the authors investigate how household living arrangements and other factors affect income in single-mother families.

They find that a single parent with more earning power and child benefits is more likely not to live with relatives. But single mothers are increasingly choosing to live with other adults or relatives to survive and to raise their children in times of economic stress and uncertainty.

Half of all single mothers in Russia live with their parents, their adult siblings, or other adult relatives. Help from relatives is important to single-mother families, and that help — including the sharing of domestic and child-care duties — is more efficient and productive when the single parent lives with the family.

The other half live in independent residences and face increased risk of poverty.

This paper — a product of Poverty and Human Resources, Development Re-

search Group — is part of a larger effort in the group to understand the mechanisms used by households in transition economies to cope with poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [mlokshin@worldbank.org](mailto:mlokshin@worldbank.org), [popkin@unc.edu](mailto:popkin@unc.edu), and [harris@unc.edu](mailto:harris@unc.edu). (27 pages)

### 2301. Identifying Welfare Effects from Subjective Questions

Martin Ravallion and Michael Lokshin  
(March 2000)

*In subjective surveys, people who become ill or lose their jobs report reduced well-being, even if they later get a job. Perhaps their exposure to uninsured risk outside the formal employment sector reduces their expectations about future income. Do potential biases cloud the inferences that can be drawn from subjective surveys?*

Ravallion and Lokshin argue that the welfare inferences drawn from subjective answers to questions on qualitative surveys are clouded by concerns about the structure of measurement errors and how latent psychological factors influence observed respondent characteristics.

They propose a panel data model that allows more robust tests. In applying the model to high-quality panel data for Russia for 1994–96, they find that some results widely reported in past studies of subjective well-being appear to be robust but others do not.

Household income, for example, is a highly significant predictor of self-rated economic welfare; per capita income is a weaker predictor.

Ill health and loss of a job reduce self-reported economic welfare, but demographic effects are weak at a given current income.

And the effect of unemployment is not robust. Returning to work does not restore a sense of welfare unless there is an income gain. The results imply that even transient unemployment brings the feeling of a permanent welfare loss, suggest-

ing that high unemployment benefits do not attract people out of work but do discourage a return to work.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to understand the relationship between subjective and objective economic welfare. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [mravallion@worldbank.org](mailto:mravallion@worldbank.org) and [mlokshin@worldbank.org](mailto:mlokshin@worldbank.org). (37 pages)

### 2302. Why Liberalization Alone Has Not Improved Agricultural Productivity in Zambia: The Role of Asset Ownership and Working Capital Constraints

Klaus Deininger and Pedro Olinto  
(March 2000)

*Policies to foster accumulation of the assets needed for agricultural production (including draft animals and implements) and to provide complementary public goods (education, credit, and good agricultural extension services) could greatly help reduce poverty and improve productivity in Zambia.*

Deininger and Olinto use a large panel data set from Zambia to examine factors that could explain the relatively lackluster performance of the country's agricultural sector after liberalization. Zambia's liberalization significantly opened the economy but failed to alter the structure of production or help realize efficiency gains. They reach two main conclusions.

First, not owning productive assets (in Zambia, draft animals and implements) limits improvements in agricultural productivity and household welfare. Owning oxen increases income directly, allows farmers to till their fields efficiently when rain is delayed, increases the area cultivated, and improves access to credit and fertilizer markets.

Second, the authors reject the hypothesis that the application of fertilizer is unprofitable because of high input prices. Rather,

fertilizer use appears to have declined because of constraints on supplies, which government intervention exacerbated instead of alleviating. (Extending the use of fertilizer to the many producers not currently using it would be profitable, but increasing the amount applied by the few producers who now have access to it would not be.)

Policies to foster accumulation of the assets needed for agricultural production (including draft animals and implements) and to provide complementary public goods (education, credit, and good agricultural extension services) could greatly help reduce poverty and improve productivity.

This paper — a product of Rural Development, Development Research Group — is part of a larger effort in the group to analyze determinants of rural growth and market participation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Maria Fernandez, room MC3-508, telephone 202-473-3766, fax 202-522-1151, email address mfernandez2@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [kdeininger@worldbank.org](mailto:kdeininger@worldbank.org) or [polinto@worldbank.org](mailto:polinto@worldbank.org). (22 pages)

### 2303. Malaria and Growth

F. Desmond McCarthy, Holger Wolf, and Yi Wu  
(March 2000)

*Malaria ranks among the foremost health problems in tropical countries. Allowing for reverse causation, malaria is estimated to reduce GDP per capita growth rates by at least a quarter percentage point a year in many Sub-Saharan countries.*

McCarthy, Wolf, and Wu explore the two-sided link between malaria morbidity and GDP per capita growth. Climate significantly affects cross-country differences in malaria morbidity. Tropical location is not destiny, however: greater access to rural health care and greater income equality are associated with lower malaria morbidity. But the interpretation of this link is ambiguous: does greater income equality allow for improved anti-malaria efforts, or does malaria itself increase income inequality?

Allowing for two-sided causation, McCarthy, Wolf, and Wu find a significant

negative causal effect running from malaria morbidity to the growth rate of GDP per capita. In about a quarter of their sample countries, malaria is estimated to reduce GDP per capita growth by at least 0.25 percentage point a year.

This paper — a product of Public Economics, Development Research Group — is part of a larger effort in the group to study the health-environment-economy nexus. This study was funded by the Bank's Research Support Budget under the research project "Health, Environment, and the Economy" (RPO 683-73). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [fmccarthy@worldbank.org](mailto:fmccarthy@worldbank.org) and [holger.wolf@mailexcite.com](mailto:holger.wolf@mailexcite.com). (24 pages)

### 2304. Disinflation and the Supply Side

Pierre-Richard Agénor and Lodovico Pizzati  
(March 2000)

*What role do supply-side factors play in the dynamics of output and absorption in exchange rate-based stabilization programs?*

Agénor and Pizzati study the dynamics of output, consumption, and real wages induced by a disinflation program based on permanent and temporary reductions in the nominal devaluation rate.

They use an intertemporal optimizing model of a small open economy in which domestic households face imperfect world capital markets, the labor supply is endogenous, and wages are flexible.

The model predicts that, with a constant capital stock and no investment, there is an initial reduction in real wages and output expands. Consumption falls on impact but increases afterward.

In addition, with a temporary shock, a current account deficit emerges and, later, a recession sets in, as documented in various studies.

With endogenous capital accumulation, numerical simulations show that the model can also predict a boom in investment.

This paper is a product of the Economic Policy and Poverty Reduction Division, World Bank Institute. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tanya Loftus, room J4-282, telephone 202-473-6317, fax 202-676-9810, email address [tloftus@worldbank.org](mailto:tloftus@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [pagenor@worldbank.org](mailto:pagenor@worldbank.org) and [lpizzati@worldbank.org](mailto:lpizzati@worldbank.org). (33 pages)

### 2305. The Impact of Banking Crises on Money Demand and Price Stability

Maria Soledad Martinez Peria  
(March 2000)

*Policymakers in countries undergoing banking crises should not worry about the structural stability of money demand functions; the behavior of money demand during crises can be modeled by the same function used during periods of tranquility. But policymakers should be aware that in some instances crises can give rise to variance instability in the price or inflation equations.*

Martinez Peria empirically investigates the monetary impact of banking crises in Chile, Colombia, Denmark, Japan, Kenya, Malaysia, and Uruguay. She uses cointegration analysis and error correction modeling to research:

- Whether money demand stability is threatened by banking crises.
- Whether crises bring about structural breaks in the relationship between monetary indicators and prices.

Overall, she finds no systematic evidence that banking crises cause money demand instability. Nor do the results consistently support the notion that the relationship between monetary indicators and prices undergoes structural breaks during crises. However, although individual coefficients in price equations do not seem to be severely affected by crises, crises can sometimes give rise to variance instability in price or inflation equations.

This paper — a product of Finance, Development Research Group — is part of a larger effort in the group to study banking crises. The study was funded by the Bank's Research Support Budget un-

der the research project "Monetary Policy and Monetary Indicators during Banking Crises" (RPO 683-24). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [mmartinezperia@worldbank.org](mailto:mmartinezperia@worldbank.org). (81 pages)

### 2306. International Contagion: Implications for Policy

Roberto Chang and Giovanni Majnoni  
(March 2000)

*What can the international community do to prevent financial contagion?*

Chang and Majnoni try to identify and evaluate the public policy implications of financial contagion on the basis of a very simple model of financial crises. In this model, financial contagion can be driven by a combination of fundamentals and by self-fulfilling market expectations.

The model allows the authors to identify different notions of contagion, especially the distinction between "monsoonal effects," "spillovers," and "switchers between equilibria."

They discuss both domestic and international policy options.

Domestic policies, they say, should be aimed at reducing financial fragility — that is, reducing unnecessary short-term debt commitments. With explicit commitments, the maturity of external debts should be lengthened. With implicit commitments, such as private liability guarantees, they emphasize limiting or eliminating such guarantees, to improve an economy's international liquidity and reduce its exposure to contagion.

Internationally, they stress the need for improving financial standards, which makes it easier to assess when a country is subject to different kinds of contagion. The effectiveness of international rescue packages depends on the kind of contagion to which a country is exposed.

Implications: The international community should help those countries that are already helping themselves.

This paper — a product of the Financial Sector Strategy and Policy Group — is

part of a larger effort in the group to study the determinants and policy implications of international financial contagion. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Elena Mekhova, room MC9-622, telephone 202-458-5984, fax 202-522-2031, email address [emekhova@worldbank.org](mailto:emekhova@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Giovanni Majnoni may be contacted at [gmajnoni@worldbank.org](mailto:gmajnoni@worldbank.org). (34 pages)

### 2307. Surveying Surveys and Questioning Questions: Learning from World Bank Experience

Francesca Recanatini, Scott J. Wallsten,  
and Lixin Colin Xu  
(March 2000)

*How to make firm-level surveys more consistent, yielding data more relevant to policy analysis.*

The World Bank has increasingly focused on firm-level surveys to build the data foundation needed for accurate policy analysis in developing and transition economies. Recanatini, Wallsten, and Xu take stock of some recent Bank surveys and discuss how to improve their results.

Lessons on data issues and hypothesis testing:

- Use panel data, if possible.
- Have enough information about productivity to estimate a production function.
- Avoid the paradigm of "list the severity of the obstacle/problem on a scale of 1 to 5." Instead, ask for data on specific dimensions of the problem that will shed light on alternative hypotheses and policy recommendations.
- Pick particular disaggregated industries and sample those industries in each survey.
- Identify the most important policy interventions of interest and consider how you will empirically identify specific changes by picking instruments useful for doing so.

Lessons on questionnaire design:

- Incorporate only one idea or dimension in each question. Do not ask, in one question, about the "quality, integrity, and efficiency" of services, for example.
- Consider the costs and benefits of numeric scales compared with adjectival

scales. Scales in which each point is labeled may be more precise than numeric scales in which only the endpoints are labeled. But responses are very sensitive to the exact adjective chosen and it may be impossible to translate adjectives precisely across languages, making it impossible to compare responses across countries.

- Recognize that the share of respondents expressing opinions will be biased upward if the survey does not include a middle ("indifferent" or "don't know") category and downward if it does include the middle category.

- When asking degree-of-concern and how-great-an-obstacle questions, consider first asking a filter question (such as "Do you believe this regulation is an obstacle or not?"). If the answer is yes, then ask how severe the obstacle is.

- Be aware of the effects of context. The act of asking questions can affect the answers given on subsequent, related questions.

- Think carefully about how to ask sensitive questions. Consider using a self-administered module for sensitive questions. Alternatively, a randomized response mechanism may be a useful, truth-revealing mechanism.

This paper — a product of Regulation and Competition Policy, Development Research Group — is part of a larger effort in the group to develop consistent cross-country firm level surveys. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address [psintimaboagye@worldbank.org](mailto:psintimaboagye@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [frecanatini@worldbank.org](mailto:frecanatini@worldbank.org), [wallsten@leland.stanford.edu](mailto:wallsten@leland.stanford.edu), or [lxu1@worldbank.org](mailto:lxu1@worldbank.org). (44 pages)

### 2308. How Small Should an Economy's Fiscal Deficit Be?: A Monetary Programming Approach

Paul Beckerman  
(March 2000)

*A spreadsheet planning model to help determine the government deficit consistent with a specified vector of country macroeconomic objectives.*

Beckerman describes a spreadsheet planning model to help determine the government deficit consistent with a policy-maker's "vector" of principal macroeconomic objectives (including real GDP growth, inflation, exchange rate, and international reserve accumulation). The model focuses on the monetary accounts, applying balance-of-payments forecasts formulated separately but based on the same macroeconomic objectives.

The model is a consistency exercise, intended as part of a broader consistency exercise for a given macroeconomy. It offers one more perspective on the question of how large a government deficit should be — a perspective that can be used in conjunction with others.

For each forecast period, the model determines consistent period-end and period-average stocks for the economy's outstanding central bank assets and liabilities and government obligations. It applies forecasting assumptions about interest rates to forecast central bank profit-and-loss flows, and takes account of these in determining the overall flow of resources that would be available to finance the government deficit.

An annex describes a (purely illustrative) simulation carried out during 1999 for Ecuador.

This paper — a product of the Poverty Reduction and Economic Management Sector Unit, Latin America and the Caribbean Region — is part of a larger effort in the region to strengthen the tools for macroeconomic policy analysis and planning in the region's economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hazel Vargas, room 18-138, telephone 202-473-8546, fax 202-522-2119, email address hvargas@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [pbeckerman@worldbank.org](mailto:pbeckerman@worldbank.org). (34 pages)

### 2309. What Drives Private Saving around the World?

Norman Loayza, Klaus Schmidt-Hebbel, and Luis Servén  
(March 2000)

*Saving rates vary considerably across countries and over time. Policies that spur*

*development are an indirect but effective way to raise private saving rates — which rise with the level and growth rate of real per capita income.*

Loayza, Schmidt-Hebbel, and Servén investigate the policy and nonpolicy factors behind saving disparities, using a large panel data set and an encompassing approach including several relevant determinants of private saving. They extend the literature in several dimensions by:

- Using the largest data set on aggregate saving assembled to date.
- Using panel instrumental variable techniques to correct for endogeneity and heterogeneity.

• Performing robustness checks on changes in estimation procedures, data samples, and model specification.

Their main empirical findings:

- Private saving rates show considerable inertia (are highly serially correlated even after controlling for other relevant factors).

• Private saving rates rise with the level and growth rate of real per capita income. So policies that spur development are an indirect but effective way to raise private saving rates.

• Predictions of the life-cycle hypothesis are supported in that dependency ratios generally have a negative effect on private saving rates.

• The precautionary motive for saving is supported by the finding that inflation — conventionally taken as a summary measure of macroeconomic volatility — has a positive impact on private saving, holding other facts constant.

• Fiscal policy is a moderately effective tool for raising national saving.

• The direct effects of financial liberalization are largely detrimental to private saving rates. Greater availability of credit reduces the private saving rate; financial depth and higher real interest rates do not increase saving.

This paper — a product of Macroeconomics and Growth, Development Research Group — is part of a larger effort in the group to understand the determinants of saving in developing countries. The study was funded by the Bank's Research Support Budget under the research project "Saving in the World: Puzzles and Policies" (RPO 681-36). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room MC3-341, telephone 202-473-7471, fax

202-522-3518, email address [kkhine@worldbank.org](mailto:kkhine@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [nloayza@worldbank.org](mailto:nloayza@worldbank.org) or [lserven@worldbank.org](mailto:lserven@worldbank.org). (32 pages)

### 2310. How Politics and Institutions Affect Pension Reform in Three Postcommunist Countries

Mitchell A. Orenstein  
(March 2000)

*During reform's three phases — commitment-building, coalition-building, and implementation — there are tradeoffs among inclusiveness (of process), radicalism (of reform), and participation in, and compliance with, the new system. Including more, and more various, veto and proposal actors early in the deliberative process may increase buy-in and compliance when pension reform is implemented, but at the expense of faster and greater change.*

Orenstein examines the political and institutional processes that produced fundamental pension reform in three post-communist countries: Hungary, Kazakhstan, and Poland. He tests various hypotheses about the relationship between deliberative process and outcomes through detailed case studies of pension reform.

The outcomes of reform were similar: each country implemented a mandatory funded pension system as part of reform, but the extent and configuration of changes differed greatly.

Countries with more "veto actors" — social and institutional actors with an effective veto over reform — engaged in less radical reform, as theory predicted. Poland and Hungary generated less radical change than Kazakhstan, partly because they have more representative political systems, to which more associations, interest groups, and "proposal actors" have access. Proposal actors shape the reform agenda and influence the positions of key veto actors. Pension reform takes longer in countries with more veto and proposal actors, such as Poland and Hungary. Legacies of policy, the development of civil society, and international organizations also profoundly affect the shape and progress of reform.

Orenstein sees pension reform as happening in three phases: commitment



building, coalition-building, and implementation. He presents hypotheses about tradeoffs among inclusiveness (of process), radicalism (of reform), and participation in, and compliance with, the new system.

One hypothesis: Including more, and more various, veto and proposal actors early in the deliberative process increases buy-in and compliance when reform is implemented, but at the expense of faster and greater change.

Early challenges in implementation in all three countries, but especially in Kazakhstan, suggest the importance of improving buy-in through inclusive deliberative processes, where possible.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to study the political economy of pension reform. This study was funded by the Bank's Research Support Budget under the research project "The Political Economy of Pension Reform" (RPO 682-17). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Marianne Leenaerts, room J2-002, telephone 202-458-4264, fax 202-676-0961, email address [mleenaerts@worldbank.org](mailto:mleenaerts@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [maorenst@syrr.edu](mailto:maorenst@syrr.edu). (75 pages)

### 2311. The Buenos Aires Water Concession

Lorena Alcázar, Manuel A. Abdala, and Mary M. Shirley  
(April 2000)

*Transparent, rule-based decisionmaking is important to maintaining public trust in regulated infrastructure. The Buenos Aires water and sanitation concession led to remarkable improvements in delivery and coverage of services and to lower prices for consumers. But a poor information base, lack of transparency in regulatory decisions, and the ad hoc nature of executive branch interventions make it difficult to reassure consumers that their welfare is being protected and that the concession is sustainable.*

The signing of a concession contract for the Buenos Aires water and sanitation system in December 1992 attracted worldwide

attention and caused considerable controversy in Argentina.

It was one of the world's largest concessions, but the case was also interesting for other reasons. The concession was implemented rapidly, in contrast with slow implementation of privatization in Santiago, for example. And reform generated major improvements in the sector, including wider coverage, better service, more efficient company operations, and reduced waste. Moreover, the winning bid brought an immediate 26.9 percent reduction in water system tariffs.

Consumers benefited from the system's expansion and from the immediate drop in real prices, which was only partly reversed by subsequent changes in tariffs and access charges. And these improvements would probably not have occurred under public administration of the system.

Still, as Alcázar, Abdala, and Shirley show, information asymmetries, perverse incentives, and weak regulatory institutions could threaten the concession's sustainability. Opportunities for the company to act opportunistically — and the regulator, arbitrarily — exist because of politicized regulation, a poor information base, serious flaws in the concession contract, a lumpy and ad hoc tariff system, and a general lack of transparency in the regulatory process.

Because of these circumstances, public confidence in the process has eroded. The Buenos Aires concession shows how important transparent, rule-based decisionmaking is to maintaining public trust in regulated infrastructure.

This paper — a product of Regulation and Competition Policy, Development Research Group — is part of a larger effort in the group to analyze institutional issues in regulated infrastructure. The study was funded by the Bank's Research Support Budget under the research project "Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply" (RPO 681-87). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-8526, fax 202-522-1155, email address [psintimaboagye@worldbank.org](mailto:psintimaboagye@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Mary Shirley may be contacted at [mshirley@worldbank.org](mailto:mshirley@worldbank.org). (62 pages)

### 2312. Measuring Governance, Corruption, and State Capture: How Firms and Bureaucrats Shape the Business Environment in Transition Economies

Joel S. Hellman, Geraint Jones, Daniel Kaufmann, and Mark Schankerman  
(April 2000)

*In a new approach to measuring typically "subjective" variables, BEEPS — the 1999 Business Environment and Enterprise Performance Survey, the transition economies component of the World Business Environment Survey — quantitatively assesses governance from the perspective of about 3,000 firms in 20 countries. Unbundling the measurement of governance and corruption empirically suggests the importance of grand corruption in some countries, manifested in state capture by the corporate sector — through the "purchase" of decrees and legislation — and by graft in procurement.*

As a symptom of fundamental institutional weaknesses, corruption needs to be viewed within a broader governance framework. It thrives where the state is unable to reign over its bureaucracy, to protect property and contractual rights, or to provide institutions that support the rule of law. Furthermore, governance failures at the national level cannot be isolated from the interface between the corporate and state sectors, in particular from the heretofore underemphasized influence that firms may exert on the state. Under certain conditions, corporate strategies may exacerbate misgovernance at the national level.

An in-depth empirical assessment of the links between corporate behavior and national governance can thus provide particular insights. The 1999 Business Environment and Enterprise Performance Survey (BEEPS) — the transition economies component of the ongoing World Business Environment Survey — assesses in detail the various dimensions of governance from the perspective of about 3,000 firms in 20 countries. After introducing the survey framework and measurement approach, Hellman, Jones, Kaufmann, and Schankerman present the survey results, focusing on governance, corruption, and state capture.

By unbundling governance into its many dimensions, BEEPS permits an in-depth empirical assessment. The authors

pay special attention to certain forms of grand corruption, notably state capture by parts of the corporate sector — that is, the propensity of firms to shape the underlying rules of the game by “purchasing” decrees, legislation, and influence at the central bank, which is found to be prevalent in a number of transition economies. The survey also measures other dimensions of grand corruption, including those associated with public procurement, and quantifies the more traditional (“pettier”) forms of corruption.

Cross-country surveys may suffer from bias if firms tend to systematically over- or underestimate the extent of problems within their country. The authors provide a new test for this potential bias, finding little evidence of country perception bias in BEEPS.

This paper — a joint product of Governance, Regulation, and Finance, World Bank Institute, and the Chief Economist's Office, European Bank for Reconstruction and Development — is part of a larger program to measure governance and corruption worldwide. A companion working paper that econometrically analyzes the effects of state capture is forthcoming. For further details, visit [www.worldbank.org/wbi/governance](http://www.worldbank.org/wbi/governance). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Diane Bouvet, room J3-273, telephone 202-473-5818, fax 202-334-8350, email address [dbouvet@worldbank.org](mailto:dbouvet@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [dkaufmann@worldbank.org](mailto:dkaufmann@worldbank.org) or [hellmanj@ebrd.com](mailto:hellmanj@ebrd.com). (44 pages)

### 2313. How Interest Rates Changed under Financial Liberalization: A Cross-Country Review

Patrick Honohan  
(April 2000)

*As financial liberalization progressed, the general level of real interest rates increased more in developing countries than it did in industrial countries. Volatility in wholesale interest rates also jumped, often markedly, in most liberalizing countries. Treasury bill rates and bank spreads showed the greatest increase in developing countries, shifting substantial rents from the public sector and from favored borrowers.*

Financial liberalization was expected to make interest rates and asset prices more volatile, with distributional consequences such as reduced or relocated rents and increased competition in financial services. Honohan examines available data on money market and bank interest rates for evidence of whether these things happened.

He shows that as more and more countries liberalized, the level and dynamic behavior of developing-country interest rates converged to industrial-country norms. In the short term, volatility increased in both real and nominal money market interest rates. Treasury bill rates and bank spreads, evidently the most repressed, showed the greatest increase as liberalization progressed — shifting substantial rents from the public sector and from favored borrowers.

Whereas quoted bank spreads in industrial countries contracted somewhat in the late 1990s, spreads in developing countries remained much higher, presumably reflecting both market power and the higher risks of lending in the developing world.

There was no clear-cut change in mean rates of inflation, monetary depth, or GDP growth. If anything, there was a small average improvement in inflation, but a decline in monetary depth and economic growth, relative to trends in industrial countries.

This paper — a product of Finance, Development Research Group — is part of a larger effort in the group to explore optimal policy under financial liberalization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address [ayaptenco@worldbank.org](mailto:ayaptenco@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [phonohan@worldbank.org](mailto:phonohan@worldbank.org). (48 pages)

### 2314. Technological Leadership and Foreign Investors' Choice of Entry Mode

Beata K. Smarzynska  
(April 2000)

*Developing country governments tend to favor joint ventures over other forms of foreign direct investment, believing that*

*local participation facilitates the transfer of technology and marketing skills. However, foreign investors who are technological or marketing leaders in their industries are more likely to invest in wholly owned projects than to share ownership. Thus in R&D-intensive sectors joint ventures may offer less potential for transferring technology and marketing techniques than wholly owned subsidiaries.*

Developing country governments tend to favor joint ventures over other forms of foreign direct investment, believing that local participation facilitates the transfer of technology and marketing skills. Smarzynska assesses joint ventures' potential for such transfers by comparing the characteristics of foreign investors engaged in joint ventures with those of foreign investors engaged in wholly owned projects in transition economies in the early 1990s.

Unlike the existing literature, Smarzynska focuses on intra-industry differences rather than interindustry differences in R&D and advertising intensity.

Empirical analysis shows that foreign investors who are technological or marketing leaders in their industries are more likely to invest in wholly owned projects than to share ownership. This is true in high- and medium-technology sectors but not in industries with low R&D spending.

Smarzynska concludes that it is inappropriate to treat industries as homogeneous in investigating modes of investment. She also suggests that in sectors with high R&D spending joint ventures may present less potential for transfer of technology and marketing techniques than wholly owned subsidiaries.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to study the contribution of trade and foreign direct investment to technology transfer. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address [ltabada@worldbank.org](mailto:ltabada@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [bsmarzynska@worldbank.org](mailto:bsmarzynska@worldbank.org) (31 pages)

### 2315. Investment in Natural Gas Pipelines in the Southern Cone of Latin America

Alejandro Jadresic  
(April 2000)

*The natural gas pipelines between Argentina and Chile are large-scale investments in competitive environments. Jadresic, a former minister of energy in Chile, argues that a competitive energy sector and free entry were important policy initiatives to spur the cross-border investments that have benefited Chile's energy sector and environment.*

Increasing demand for clean energy sources is expanding investment in natural gas infrastructure around the world. Many international projects involve pipelines connecting energy markets in two or more countries.

A key feature of investment taking place in Latin America is the convergence of gas and electricity markets. Many projects are being developed to supply gas to new power generation plants needed to meet electricity demand.

Construction of a pipeline over the Andes mountains to supply gas from Argentina to energy markets in central Chile was an idea long unfulfilled for political, economic, and technical reasons. Great changes have now taken place in a very short time.

Jadresic discusses both the achievements and the challenges to be faced by pipeline developers and Chile's energy sector. He details the benefits of the cooperative effort to consumers in terms of lower energy prices, higher environmental standards, and a more reliable energy system.

The experience in Latin America's Southern Cone shows how technological innovation, economic deregulation, and regional integration make it possible to build major international gas pipeline projects within a competitive framework and without direct state involvement.

This paper — a product of Private Participation in Infrastructure, Private Sector Advisory Services Department — is part of a larger effort in the department to analyze and disseminate the principles of, and good practice for, promoting competition in infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mina Salehi, room 110-118, telephone 202-473-7157, fax 202-

522-2029, email address msalehi@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at jadresic@creuna.cl. (29 pages)

### 2316. Distributional Outcomes of a Decentralized Welfare Program

Emanuela Galasso and Martin Ravallion  
(April 2000)

*Community-level targeting of antipoverty programs is now common. Do local community organizations target the poor better than the central government? In one program in Bangladesh, the answer tends to be yes, but performance varies from village to village. The authors try to explain why.*

It is common for central governments to delegate authority over the targeting of welfare programs to local community organizations — which may be better informed about who is poor, though possibly less accountable for getting the money to the local poor — while the center retains control over how much goes to each local region.

Galasso and Ravallion outline a theoretical model of the interconnected behavior of the various actors in such a setting. The model's information structure provides scope for econometric identification.

Applying data for a specific program in Bangladesh, they find that overall targeting was mildly pro-poor, mostly because of successful targeting within villages. But this varied across villages. Although some village characteristics promoted better targeting, these were generally not the same characteristics that attracted resources from the center.

Galasso and Ravallion observe that the center's desire for broad geographic coverage appears to have severely constrained the scope for pro-poor village targeting. However, poor villages tended not to be better at reaching their poor.

They find some evidence that local institutions matter. The presence of cooperatives for farmers and the landless appears to be associated with more pro-poor program targeting. The presence of recreational clubs has the opposite effect.

Sometimes the benefits of decentralized social programs are captured by local elites, depending on the type of spending

being decentralized. When public spending is on a private (excludable) good, and there is no self-targeting mechanism to ensure that only the poor participate, there is ample scope for local mistargeting.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to assess the performance of alternative means of reaching the poor through public programs. The study was funded by the Bank's Research Support Budget under the research project "Policies for Poor Areas" (RPO 681-39). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC4-773, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [egalasso@worldbank.org](mailto:egalasso@worldbank.org) or [mravallion@worldbank.org](mailto:mravallion@worldbank.org). (37 pages)

### 2317. Trade Negotiations in the Presence of Network Externalities

Keiko Kubota  
(April 2000)

*With technology-related goods and services, the presence of network externalities affects a country's willingness to trade. To achieve efficiency gains through worldwide standardization and mutually beneficial trade arrangements, it is important to arrive at multilateral trade agreements before regional blocs form.*

Network externalities exist when the benefit a consumer derives from a good or service depends on the number of other consumers using the same good or service (as happens, for example, with telecommunications, television broadcasting standards, and many other technology-related goods and services).

National monopolies, regulated and endorsed by sovereign governments, tended to produce network externalities in the past: most countries had telephone monopolies, often state-owned, before deregulation. Whether to allow foreign competition in such industries becomes a pressing issue when national boundaries begin to blur as technology advances and as previously untraded goods and services become tradable.

Despite obvious gains from trade in such newly tradable sectors, governments often keep trade-prohibiting measures. With analog high definition television (HDTV) transmission standards, for example, regulations and politics kept Europe and Japan from cooperating, so each invested heavily to develop its system in an attempt to have its own standard adopted by the rest of the world.

Kubota analyzes how the presence of network externalities affects a country's willingness to trade. In her model, governments decide whether or not to allow international trade. When trading is permitted, the superior standard drives out all others in the trading area.

She shows that even when there are efficiency gains from worldwide standardization, global free trade may not prevail. The technology leader is generally eager to trade, but countries with less advanced technology often choose to form inefficient regional blocs or not to trade at all. Once such regional networks are established, global efficiency-enhancing free trade becomes even harder to achieve than it would have been in their absence.

Transfer payments between countries reduce or eliminate such inefficiency and facilitate the achievement of efficient trade in products.

To achieve mutually beneficial trade arrangements, it is important to arrive at multilateral agreements before regional blocs form.

This paper is a product of Trade, Development Research Group. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [kkubota@worldbank.org](mailto:kkubota@worldbank.org). (27 pages)

### **2318. Regulatory Reform, Competition, and Innovation: A Case Study of the Mexican Road Freight Industry**

Mark A. Dutz, Aydin Hayri,  
and Pablo Ibarra  
(April 2000)

*Regulatory reform can spur innovations in infrastructure services, generating new*

*downstream activities and magnifying the economywide benefits of reform. The national competition agency can help greatly in laying the groundwork for reform by making a compelling case for the reform's expected benefits.*

Discussions of competition and regulatory reform typically focus on price and quantity effects. But improving certain infrastructure services can also stimulate entry and competition in user industries downstream, allowing new firms to enter, incumbent users to offer new products, and rivalry to intensify.

Dutz, Hayri, and Ibarra present a case study of how innovations in road freight services affect selected downstream users of those services after regulatory reform. After a period of rigid regulation and heavy government interference, Mexico in 1989 developed a new policy framework for road transport, with free entry and market-based price setting. The result: faster, more reliable trucking has allowed user companies to offer new, previously unavailable products and to reach new areas with existing products. Cheaper, more customer-responsive trucking services have allowed logistical innovations in user firms, and some user firms have decided not to keep their own fleets of trucks but to outsource trucking services on the open market, thereby converting fixed costs to variable costs. For one fertilizer company, the benefits of reform included a 10 percent improvement in operating margin.

Successful reform requires careful planning and execution and political support at high levels. Regulatory reform also profoundly changes the sectoral institution formerly responsible for the regulation. Enough resources should be provided to help organizations in the reformed industry make the transition to the post-reform environment — helping with such tasks as defining the organization's new role and facilitating the redeployment of staff.

The national competition agency can help greatly in laying the groundwork for reform by making a compelling case for the reform's expected benefits. After reform, the competition agency should also help with enforcement, to ensure that the cozy, cartel-like behavior stimulated by tight entry restrictions does not persist. In Mexico, three strong interventions were required to discipline attempted anti-competitive practices in the trucking industry in the years following reform.

This paper is a product of Public Economics, Development Research Group. The study was funded by the Bank's Research Support Budget under the research project "Competition and Barriers to Entrepreneurship" (RPO 682-57). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [mdutz@worldbank.org](mailto:mdutz@worldbank.org), [ahayri@dtus.com](mailto:ahayri@dtus.com), or [ibarrarodriguez\\_pablo@jpmorgan.com](mailto:ibarrarodriguez_pablo@jpmorgan.com). (48 pages)

### **2319. Externalities and Production Efficiency**

Gunnar S. Eskeland  
(April 2000)

*Environmental improvements should be sought from different polluters (public or private, producer or consumer, rich or poor) at the same cost, regardless of the nature of the polluting activity. Under a plausible structure of monitoring costs, emissions standards play a central role.*

Eskeland brings together two of government's primary challenges: environmental protection and taxation to generate revenues.

If negative externalities can be reduced not only by changes in consumption patterns but also by making each activity cleaner (abatement efforts), how shall inducements to various approaches be combined? If negative externalities are caused by agents as different as consumers, producers, and government, how does optimal policy combine inducements to reduce pollution?

Intuitively it seems right to tax emissions neutrally, based on marginal damages — no matter which activity pollutes or whether the polluter is rich or poor, consumer or producer, private or public. Eskeland provides a theoretical basis for such simplicity.

Three assumptions are critical to his analysis:

- Returns to scale do not influence the traditional problem of revenue generation.
- Consumers have equal access to pollution abatement opportunities (but he also relaxes this assumption).

- Planners can differentiate policy instruments (emission taxes or abatement standards) by polluting good, and by whether the polluter is a consumer, producer, or government, but they cannot differentiate such instruments (or commodity taxes) by personal characteristics or make them nonlinear in individual emissions.

Among Eskeland's findings and conclusions: Abatement efforts and consumption adjustments at all stages are optimally stimulated by a uniform emission tax levied simply where emissions occur.

It simplifies things that optimal abatement is independent of whether the car is used by government, firms, or households — for weddings or for work.

It also simplifies implementation that the stimulus to abatement at one stage (say, the factory) is independent of whether it yields emission reductions from the factory or from others (say, from car owners who buy the factory's products).

Finally, ministers of finance and of the environment should coordinate efforts, but they need not engage in each other's business. The minister of environment need not know which commodities are elastic in demand and thus would bear a low commodity tax. The finance minister need not know which commodities or agents pollute or who pays emission taxes.

This paper — a product of Public Economics, Development Research Group — is part of a larger effort in the group to establish principles for public intervention. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [geskeland@worldbank.org](mailto:geskeland@worldbank.org). (43 pages)

### 2320. Does More Intense Competition Lead to Higher Growth?

Mark A. Dutz and Aydin Hayri  
(April 2000)

*Empirical evidence indicates a strong correlation between long-run growth and effective enforcement of antitrust and competition policy.*

The relationship between the intensity of competition in an economy and its long-run growth is an open question in economics. Theoretically, there is no clear-cut answer.

Empirical evidence exists, however, that in some sectors more competition leads to more innovation and accelerates productivity growth.

To complement those findings and capture economywide effects, Dutz and Hayri conduct a cross-country study. They examine the impact on growth of various measures having to do with intensity of domestic competition — beyond the effects of trade liberalization.

Their results indicate a strong correlation between long-run growth and effective enforcement of antitrust and competition policy.

An earlier version of this paper — a product of Public Economics, Development Research Group — was presented at a conference, Industrial Reorganization and Development, in Toulouse, France (November 1998). The study was funded by the Bank's Research Support Budget under the research project "Does More Intense Competition Lead to Higher Growth?" (RPO 682-47). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [mdutz@worldbank.org](mailto:mdutz@worldbank.org) or [ahayri@dtus.com](mailto:ahayri@dtus.com). (25 pages)

### 2321. Algorithms for Purchasing AIDS Vaccines

David Bishai, Maria K. Lin,  
and C. W. B. Kiyonga  
(April 2000)

*"Demand" for AIDS vaccines varies by level of risk and by national wealth. At-risk individuals in poor countries suffer on both counts. Providing funds to develop and distribute AIDS vaccines should be a global concern.*

Bishai, Lin, and Kiyonga delineate two different algorithms for the purchase of AIDS vaccines, to show how differences in policy objectives can greatly affect projec-

tions of the number of courses of vaccine that will be needed.

They consider a hypothetical vaccine costing \$10 to produce, and offering 60 percent, 75 percent, and 90 percent reductions in the risk of HIV for 10 years. For each of the world's 10 major geographic divisions, they use published estimates of the risk of AIDS, the value of medical costs averted, and the value of potential productivity losses.

Under the "health sector" algorithm — in which purchases are made to minimize the impact of AIDS/HIV on government health spending — 766 million courses of vaccine would be purchased. Under the "societal" algorithm — in which purchases are made to minimize the impact of AIDS/HIV on health spending and GDP — more than 3.7 billion courses of vaccine would be purchased.

Under an "equity" model — allocating vaccines to everyone in the world at high risk as if they had the financial resources of Western Europeans — vaccine would be offered to 4.7 billion people. For a Western European man, reducing the risk of HIV/AIDS would be a \$789 concern; in Africa, the comparable risk would be a \$48,577 crisis.

The authors conclude that financing AIDS vaccines solely on the fixed budget of a ministry of health means large vulnerable populations wouldn't receive the vaccine. Allocating the vaccine based on society's ability to pay would still exclude many poor infants who would probably be immunized if they were born in more developed regions.

Policymakers concerned about equity in health care must redouble efforts to making the financing of development and distribution of AIDS vaccines a global, not a regional, concern.

This paper was commissioned by the World Bank AIDS Vaccine Task Force, cochaired by Poverty and Human Resources, Development Research Group and the Health, Nutrition, and Population Team, Human Development Network. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address [psader@worldbank.org](mailto:psader@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). David Bishai may be contacted at [dbishai@jhsph.edu](mailto:dbishai@jhsph.edu). (32 pages)

### 2322. Self-Targeted Subsidies: The Distributional Impact of the Egyptian Food Subsidy System

Richard H. Adams, Jr.  
(April 2000)

*By gradually reducing the number of subsidized foods, and by focusing subsidies on foods consumed more by the poor than by the rich — like coarse baladi bread — Egyptian policymakers have found a way to self-target food subsidies to the urban poor. Yet because the rural poor do not consume as much baladi bread, this system is not as well-targeted to the rural poor.*

The Egyptian food subsidy system is an untargeted system that is essentially open to all Egyptians. For this reason, the budgetary costs of this system have been high and the ability of this system to improve the welfare status of the poor has been questioned.

Since the food riots of 1977, Egyptian policymakers have been reluctant to make large changes in their food subsidy system. Rather, their strategy has been to reduce the costs and coverage of this system gradually. For example, since 1980 policymakers have reduced the number of subsidized foods from 20 to just four.

Despite these cutbacks, Adams uses new 1997 household survey data to show that the Egyptian food subsidy system is self-targeted to the poor, because it subsidizes “inferior” goods. In urban Egypt, for instance, the main subsidized food — coarse baladi bread — is consumed more by the poor (the lowest quintile group of the population) than by the rich (the highest quintile). So subsidizing baladi bread is a good way of improving the welfare status of the urban poor. But in rural Egypt where the poor do not consume so much baladi bread, the poor receive less in income transfers than the rich.

In many countries, administrative targeting of food subsidies can do a better job of targeting the poor than self-targeting systems. In Jamaica, for example, poor people get food stamps at health clinics, so the Jamaican poor receive double the income transfers from food subsidies that the Egyptian poor receive. But starting a comparable system in Egypt would be costly both in financial and political terms, because many nonpoor households currently receiving food subsidies would have to be excluded.

For these reasons, it is likely that the government will continue to refine the present food subsidy system, perhaps by

eliminating current subsidies on sugar or edible oil. Neither of these foods is an “inferior” good, so eliminating these subsidies will have only a minimal impact on the welfare status of the poor.

This paper — a product of the Poverty Division, Poverty Reduction and Economic Management Network — is part of a larger effort in the network to identify the impact of transfer programs on the urban and rural poor. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Moira Coleridge-Taylor, room MC4-554, telephone 202-473-3704, fax 202-522-3283, email address mcoleridgetaylor@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [radams@worldbank.org](mailto:radams@worldbank.org). (42 pages)

### 2323. Globalization and Firms' Financing Choices: Evidence from Emerging Economies

Sergio Schmukler and Esteban Vesperoni  
(April 2000)

*Debt-equity ratios do not tend to increase after financial liberalization, but there is a shift from long-term to short-term debt. Globalization has uneven effects for firms with and without access to international capital markets. Countries with deeper domestic financial markets are less affected by financial liberalization.*

Schmukler and Vesperoni investigate whether integration with global markets affects the financing choices of firms from East Asia and Latin America. Using firm-level data for the 1980s and 1990s, they study how leverage ratios, the structure of debt maturity, and sources of financing change when economies are liberalized and when firms gain access to international equity and bond markets.

The evidence shows that integration with world financial markets has uneven effects.

On the one hand, debt maturity for the average firm shortens when countries undertake financial liberalization.

On the other hand, domestic firms that actually participate in international markets get better financing opportunities and extend their debt maturity.

Moreover, firms in economies with deeper domestic financial systems are

affected less by financial liberalization.

Finally, they show that leverage ratios increase during times of crisis.

In an appendix, they analyze the previously unstudied case of Argentina, which experienced sharp financial liberalization and was hit hard by all recent global crises.

This paper — a product of Macroeconomics and Growth, Development Research Group — is part of a larger effort in the group to understand financial development and financial integration. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room MC3-341, telephone 202-473-7471, fax 202-522-3518, email address [kkhine@worldbank.org](mailto:kkhine@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [sschmukler@worldbank.org](mailto:sschmukler@worldbank.org) or [vesperon@wam.umd.edu](mailto:vesperon@wam.umd.edu). (67 pages)

### 2324. Give Growth and Macroeconomic Stability in Russia a Chance: Harden Budgets by Eliminating Nonpayments

Brian Pinto, Vladimir Drebenstov,  
and Alexander Morozov  
(April 2000)

*In Russia, implicit subsidies amounting to 10 percent of GDP per year in the form of nonpayments have stifled growth, contributed to the August 1998 macroeconomic crisis through their impact on public debt, and made at best a questionable contribution to equity. Hardening budgets requires that these nonpayments — or mutual arrears and noncash settlements among the government, the energy monopolies, and manufacturing firms — be eliminated with energy bills, taxes and budgetary spending settled on time and in cash.*

Pinto, Drebenstov, and Morozov analyze the links between Russia's disappointing growth performance in the second half of the 1990s, its costly and unsuccessful stabilization, the macroeconomic meltdown of 1998, and the spectacular rise of nonpayments.

Nonpayments flourished in an environment of fundamental inconsistency between a macroeconomic policy geared at sharp disinflation and a microeconomic policy of bailing enterprises out through soft budget constraints.



Heavy untargeted implicit subsidies flowing through the nonpayments system (amounting to 10 percent of GDP annually) have stifled growth, contributed to the August 1998 meltdown through their impact on public debt, and have made at best a questionable contribution to equity.

Dismantling this system must be a top priority, along with promoting enterprise restructuring and growth (by hardening budget constraints) and medium-term macroeconomic stability (by reducing the size of subsidies).

Getting the government out of the nonpayments system means settling all appropriately controlled budgetary expenditures on time and in cash, and eschewing spending arrears, thereby setting an example for enterprises and laying the groundwork for eliminating tax offsets at all levels of government, and insisting on cash tax payments.

To stop energy-related subsidies would require not only that the government pay its own energy bills on time and in cash, but also that the energy monopolies be empowered to disconnect nonpaying clients. This will enable the government to insist that the energy monopolies in turn pay their own taxes in full and on time.

This paper — a product of the Economics Unit, World Bank Office, Moscow — was produced as part of the Economic and Sector Work Program, Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region. Copies of the paper are available free from the World Bank, 1818 H Street, NW, Washington, DC 20433. Please contact Helena Makarenko, room H4-304, telephone 202-458-7832, fax 202-522-2753, email address [hmakarenko@worldbank.org](mailto:hmakarenko@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [bpinto2@worldbank.org](mailto:bpinto2@worldbank.org), [vdrebentsov@worldbank.org](mailto:vdrebentsov@worldbank.org), or [amorozov@worldbank.org](mailto:amorozov@worldbank.org). (27 pages)

### 2325. Banking Systems Around the Globe: Do Regulation and Ownership Affect Performance and Stability?

James R. Barth, Gerard Caprio, Jr.,  
and Ross Levine  
(April 2000)

*Empirical results highlight the downside of imposing certain regulatory restrictions*

*on commercial bank activities. Regulations that restrict banks' ability to engage in securities activities and to own nonfinancial firms are closely associated with more instability in the banking sector. And keeping commercial banks from engaging in investment banking, insurance, and real estate activities does not appear to produce positive benefits.*

Barth, Caprio, and Levine report cross-country data on commercial bank regulation and ownership in more than 60 countries. They evaluate the links between different regulatory/ownership practices in those countries and both financial sector performance and banking system stability.

They document substantial variation in response to these questions: Should it be public policy to limit the powers of commercial banks to engage in securities, insurance, and real estate activities? Should the mixing of banking and commerce be restricted by regulating commercial bank's ownership of nonfinancial firms and nonfinancial firms' ownership of commercial banks? Should states own commercial banks, or should those banks be privatized?

They find:

- There is no reliable statistical relationship between restrictions on commercial banks' ability to engage in securities, insurance, and real estate transactions and a) how well-developed the banking sector is, b) how well-developed securities markets and nonbank financial intermediaries are, or c) the degree of industrial competition. Based on the evidence, it is difficult to argue confidently that restricting commercial banking activities benefits — or harms — the development of financial and securities markets or industrial competition.

- There are no positive effects from mixing banking and commerce.

- Countries that more tightly restrict and regulate the securities activities of commercial banks are substantially more likely to suffer a major banking crisis. Countries whose national regulations inhibit banks' ability to engage in securities underwriting, brokering, and dealing — and all aspects of the mutual fund business — tend to have more fragile financial systems.

- The mixing of banking and commerce is associated with less financial stability. The evidence does not support admonitions to restrict the mixing of banking and

commerce because mixing them will increase financial fragility.

- On average, greater state ownership of banks tends to be associated with more poorly developed banks, nonbanks, and stock markets and more poorly functioning financial systems.

This paper — a product of Finance, Development Research Group — is part of a larger effort in the group to examine the effects of financial sector regulation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address [ayaptenco@worldbank.org](mailto:ayaptenco@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [jbarth@business.auburn.edu](mailto:jbarth@business.auburn.edu), [gcaprio@worldbank.org](mailto:gcaprio@worldbank.org), or [rlevine@csom.umn.edu](mailto:rlevine@csom.umn.edu). (60 pages)

### 2326. How Urban Concentration Affects Economic Growth

Vernon Henderson  
(April 2000)

*If urban overconcentration really is an issue, it ought to affect economic growth rates in a robust, consistent fashion. And it does. Not only is there an optimal degree of urban concentration that varies with country income, but departures from optimal concentration result in substantial growth losses. Overconcentrated countries can reduce concentration by investing in interregional transport infrastructure — in particular, increasing the density of road networks.*

Henderson explores the issue of urban overconcentration econometrically, using data from a panel of 80 to 100 countries every 5 years from 1960 to 1995. He finds the following:

- At any level of development there is indeed a best degree of national urban concentration. It increases sharply as income rises, up to a per capita income of about \$5,000 (Penn World table purchasing parity income), before declining modestly. The best degree of concentration declines with country scale. Growth losses from significantly nonoptimal concentration are large. Those losses tend to rise with level of development, peaking at a very high level (about 1.5 annual percent-

age points of economic growth). Results are very robust.

- In a group of 72 countries in 1990, roughly 30 have satisfactory urban concentration, 24 have excessive concentration, and 5 to 16 countries have too little.

- The list of countries with highly excessive concentration includes Argentina, Chile, Costa Rica, and Panama (in Latin America); the Republic of Korea and Thailand (in Asia); Congo (in Africa); and Greece, Ireland, and Portugal (in Europe). Many of these countries have explicitly unitary governments or federal structures have traditionally been severely constrained.

- The list of countries with too little urban concentration includes Belgium (a small, split country) and special cases such as Czechoslovakia and the former Yugoslavia.

- Urban concentration declines with national scale. It initially rises with income, then peaks at a per capita income of about \$3,000, before declining. If the largest city in a country is a port, increased trade leads to increased urban concentration. Otherwise, increased trade leads to deconcentration as markets in the hinterland open up to trade. But trade effects are modest.

- Similarly, more political decentralization (or increased federalism) only modestly reduces urban concentration.

However, interregional transport infrastructure — especially dense road networks — significantly reduce urban concentration, an effect that rises with income.

This paper — a product of Infrastructure and Environment, Development Research Group — is part of a larger effort in the group to analyze the role of economic geography and urbanization in the development process, particularly as influenced by infrastructure investment and political decentralization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Roula Yazigi, room MC2-337, telephone 202-473-7176, fax 202-522-0056, email address ryazigi@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [vernon\\_henderson@brown.edu](mailto:vernon_henderson@brown.edu). (42 pages)

### 2327. How the Republic of Korea's Financial Structure Affects the Volatility of Four Asset Prices

Hong G. Min and Jong-goo Park  
(April 2000)

*How Korea's financial structure affects the volatility of Korea's real effective exchange rate, money market rate, government bond yields, and stock prices.*

Min and Park explore how Korea's financial structure affects the volatility of asset prices. Documented empirical evidence of the relationship between financial structure and financial crisis sheds light on the relationship between asset price volatility — extreme variations in prices — and financial structure. And the volatility of financial and nonfinancial asset prices provides an indirect link between an economy's financial structure and the likelihood of financial crisis.

Using time-series data and a set of indicators measuring financial structure, Min and Park examine how Korea's financial structure affects the volatility of the real effective exchange rate, the money market rate, government bond yields, and stock prices. They find:

- There is a stable long-term relationship between financial structure and volatility in the real effective exchange rate, the money market rate, stock prices, and the yield on government housing bonds.

- Financial structure affects asset price variables asymmetrically. Some variables' volatility increases and others' diminish, suggesting that monetary policies should target different asset markets to achieve different goals. If the goal of the monetary authority is to stabilize the money market rate, for example, intervening in the banking sector is more efficient than intervening in other financial subsectors.

- The higher volatility of stock prices reflects the thin stock market in Korea.

- The stability of the yield on government housing bonds reflects the Korean government's policy of stabilizing the nation's housing supply by isolating the housing market from the impact of Korea's financial structure.

- Restrictions on foreigners' ownership of domestic stock in Korea during the period analyzed, and the fact that most capital flows through commercial banks, affect the exchange rate, which is determined (at least in the short run) by capital flows in the foreign exchange market.

This paper — a product of the Macroeconomic Data Team, Development Data Group — is part of a larger effort in the group to understand the financial structure of developing countries based on empirical data. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Premi Rathana-Raj, room MC2-742, telephone 202-473-3705, fax 202-522-3645, email address [prathanraj@worldbank.org](mailto:prathanraj@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [hmin56@aol.com](mailto:hmin56@aol.com) or [jpark@worldbank.org](mailto:jpark@worldbank.org). (33 pages)

### 2328. Social Transfers and Social Assistance: An Empirical Analysis Using Latvian Household Survey Data

Branko Milanovic  
(April 2000)

*In Latvia, only 1.5 percent of households receive social assistance, which for those households represents 20 percent of income. The allocation of social assistance is unequal. Urban households outside the capital (Riga) and those headed by male adults are systematically "discriminated against." Because social assistance is locally financed, poor households in different parts of the country are treated unequally.*

Milanovic assesses the performance of Latvia's system of social transfers, in three ways:

First, he analyzes the incidence (who receives transfers) of pensions, family allowances, unemployment benefits, and social assistance. Per capita analysis shows pensions tending to be pro-rich and families allowances pro-poor (a finding typical in poverty analyses). Introducing an equivalence scale alters the results and shows all individual cash transfers performing about the same: mildly pro-poor.

Next, he examines the performance of social assistance, which is, by definition, directed to the poor. He shows that Latvia's current system is concentrated — meaning that social assistance is disbursed to few households (only 1.5 percent of all households receive it) but among those that do receive it, it represents a



relatively high share (20 percent) of income. Households that are systematically “discriminated against” in the allocation of social assistance are urban households living outside the capital (Riga) and those headed by male adults.

Third, he looks at the regional allocation of social assistance. The results confirm earlier findings of large horizontal inequalities — that people with the same income from different parts of the country are treated unequally, because the existing system is based on local financing of social assistance.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of the Latvia Poverty Assistance Report (February 2000). Copies of this paper are available free from the World Bank, 1818 H Street, NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address [psader@worldbank.org](mailto:psader@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [bmilanovic@worldbank.org](mailto:bmilanovic@worldbank.org). (30 pages)

### 2329. Improving Russia's Policy on Foreign Direct Investment

Joel Bergsman, Harry G. Broadman, and Vladimir Drebenstov  
(May 2000)

*Russia gets relatively little foreign direct investment and almost none of the newer, more efficient kind, involving state-of-the-art technology and world-class competitive production linked to dynamic global or regional markets. Why? And what should be done about it?*

Foreign direct investment brings host countries capital, productive facilities, and technology transfers as well as employment, new job skills, and management expertise. It is important to the Russian Federation, where incentives for competition are limited and incentives to becoming efficient are blunted by interregional barriers to trade, weak creditor rights, and administrative barriers to new entrants.

Bergsman, Broadman, and Drebenstov argue that the old policy paradigm of foreign direct investment (established before

World War II and prevalent in the 1950s and 1960s) still governs Russia. In this paradigm there are only two reasons for foreign direct investment: access to inputs for production and access to markets for outputs. Such kinds of foreign direct investment, although beneficial, are often based on generating exports that exploit cheap labor or natural resources or are aimed at penetrating protected local markets, not necessarily at world standards for price and quality.

They contend that Russia should phase out high tariffs and nontariff protection for the domestic market, most tax preferences for foreign investors (which don't increase foreign direct investment but do reduce fiscal revenues), and many restrictions on foreign direct investment.

They recommend that Russia switch to a modern approach to foreign direct investment by:

- Amending the newly enacted foreign direct investment law so that it will grant nondiscriminatory “national treatment” to foreign investors for both right of establishment and post-establishment operations, abolish conditions (such as local content restrictions) inconsistent with the World Trade Organization agreement on trade-related investment measures (TRIMs), and make investor-state dispute resolution mechanisms more efficient (giving foreign investors the chance to seek neutral binding international arbitration, for example).
- Strengthening enforcement of property rights.
- Simplifying registration procedures for foreign investors, to make them transparent and rules-based.
- Extending guarantee schemes covering basic noncommercial risks.

This paper — a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Regional Office — is part of a larger effort in the region to assist the Russian authorities in preparing for accession to the World Trade Organization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sandra Craig, room H4-166, telephone 202-473-3160, fax 202-522-2753, email address [scaig@worldbank.org](mailto:scaig@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [hbroadman@worldbank.org](mailto:hbroadman@worldbank.org) or [vdrebenstov@worldbank.org](mailto:vdrebenstov@worldbank.org). (21 pages)

### 2330. Reducing Structural Dominance and Entry Barriers in Russian Industry

Harry G. Broadman  
(May 2000)

*The absence of new business in Russia is striking. Reforms to make Russia more competitive should start with eliminating regulatory and institutional barriers to the entry of new competitors.*

Many industrial firms in Russia have undergone changes in ownership, but relatively few have been competitively restructured. Using survey and other data, Broadman suggests that much of Russian industry is immune from robust competition because of heavy vertical integration, geographic segmentation, and the concentration of buyers and sellers in selected markets.

Moreover, regulatory constraints protect incumbent firms from competition with new entrants, both domestic and foreign.

Broadman sketches a reform agenda for Russia's post-privatization program, which emphasizes the restructuring of anti-competitive structures and the reduction of barriers to entry. Broadman's proposed reform agenda calls broadly for strengthening Russia's nascent rules-based framework for competition policy to reduce discretion, increase transparency, and improve accountability.

This paper — a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Regional Office — is part of a larger effort in the region to assess structural reform in Russia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sandra Craig, room H4-166, telephone 202-473-3160, fax 202-522-2753, email address [scaig@worldbank.org](mailto:scaig@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [hbroadman@worldbank.org](mailto:hbroadman@worldbank.org). (18 pages)

### 2331. Competition, Corporate Governance, and Regulation in Central Asia: Uzbekistan's Structural Reform Challenges

Harry G. Broadman  
(May 2000)

*Like many Central Asian republics, Uzbekistan has adopted a gradual, cautious approach in its transition to a market economy. It has had some success attaining macroeconomic stability, but microeconomic reforms have lagged behind. It is time to accelerate structural reform.*

In Uzbekistan state enterprises are being changed into shareholding companies, and private enterprises account for 45 percent of all registered firms. But business decisions to set prices, output, and investment are often not market-based, nor wholly within the purview of businesses, especially those in commercial manufacturing and services.

Lines of authority for corporate governance — from state enterprises to private enterprises — are ill-defined, so there is little discipline on corporate performance and little separation between government and business.

Nascent frameworks have been created for competition policy (for firms in the commercial sector) and regulatory policy (governing utilities in the infrastructure monopoly sector). But implementation and enforcement have been hampered by old-style instruments (such as price controls) rooted in central planning, by lack of a strong independent regulatory rule-making authority, by the limited understanding of the basic concepts of competition and regulatory reform, and by weak institutional capabilities for analyzing market structure and business performance.

Based on fieldwork in Uzbekistan, Broadman recommends:

- Deepening senior policy officials' understanding of, and appreciation of the benefits from, enterprise competition and how it affects economic growth.
- Reforming competition policy institutions and legal frameworks in line with the country's goal of strengthening structural reforms and improving macroeconomic policy.
- Improving the ability of government and associated institutions to assess Uzbekistan's industrial market structure and the determinants of enterprise conduct and performance.

- Making the authority responsible for competition and regulatory policymaking into an independent agency — a "champion" of competition — answerable directly to the prime minister.

- Strengthening incentives and institutions for corporate governance and bringing them in line with international practice.

- Subjecting infrastructure monopolies to systemic competitive restructuring and unbundling, where appropriate. For other utilities, depoliticize tariff setting and implementation of regulations; ensure that price, output, and investment decisions by service suppliers are pro-competitive (creating a level playing field among users); and increase transparency and accountability to the public.

This paper — a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Regional Office — is part of a larger effort in the region to assess structural reform in Central Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sandra Craig, room H4-166, telephone 202-473-3160, fax 202-522-2753, email address [scraig@worldbank.org](mailto:scraig@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [hbroadman@worldbank.org](mailto:hbroadman@worldbank.org). (21 pages)

### 2332. Financial Intermediary Distress in the Republic of Korea: Small Is Beautiful?

Paola Bongini, Giovanni Ferri,  
and Tae Soo Kang  
(May 2000)

*During a systemic financial crisis in Korea, the probability of financial distress was greater for large financial intermediaries (such as commercial banks and merchant banking corporations) than it was for tiny mutual savings and finance companies.*

Taking the Korean experience as a laboratory experiment in systemic financial crisis, Bongini, Ferri, and Kang analyze distress in individual institutions among two groups of financial intermediaries.

They pool together a group of large financial intermediaries (commercial

banks, merchant banking corporations) and another group of tiny mutual savings and finance companies.

Both the too-big-to-fail doctrine and the credit channel approach suggest that the probability of distress would be greater for small intermediaries. But Bongini, Ferri, and Kang find that proportionately fewer small intermediaries were distressed than were large intermediaries.

They offer two hypothetical explanations for this unexpected result:

- Exchange rate exposure — a major shock to Korean intermediaries — was presumably negligible for the small financial intermediaries.

- Small financial intermediaries allocated loans better, because of the "peer monitoring" natural to their mutual nature and deep local roots.

Available data did not allow the authors to test the first hypothesis, but they did find support for the second one. Estimating a logit model, they find that the probability of distress was systematically smaller for the mutual savings and finance companies that stayed closer to their origins (for example, collecting many deposits as "credit mutual installment savings") and for those with a longer history of doing business in their local community.

This paper — a product of Finance, Development Research Group — is part of a larger effort in the group to study the financial crises in East Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-1155, email address [klabrie@worldbank.org](mailto:klabrie@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [pbongini@mi.unicatt.it](mailto:pbongini@mi.unicatt.it), [gferri@worldbank.org](mailto:gferri@worldbank.org), or [tkang@worldbank.org](mailto:tkang@worldbank.org). (35 pages)

### 2333. Output Fluctuations in Latin America: What Explains the Recent Slowdown?

Santiago Herrera, Guillermo Perry,  
and Neile Quintero  
(May 2000)

*For the period 1992–98, domestic factors explain most output variability in Latin America. However, external factors ac-*

*count for about 60 percent of the 1998–99 slowdown — perhaps in part because external variables were more volatile during this period, but mainly because domestic variables — real interest rates and real exchange rates — were more stable in these two years.*

Herrera, Perry, and Quintero explain Latin America's growth slowdown in 1998–99. To do so, they use two complementary methodologies.

The first aims at determining how much of the slowdown can be explained by specific external factors: the terms of trade, international interest rates, spreads on external debt, capital flows, and climatological factors (El Niño). Using quarterly GDP data for the eight largest countries in the region, the authors estimate a dynamic panel showing that 50–60 percent of the slowdown was due to these external factors.

The second approach allows for effects on output by some endogenous variables, such as domestic real interest rates and real exchange rates. Using monthly industrial production data, the authors estimate country-specific generalized vector autoregressions (GVAR) for the largest countries.

They find that during the sample period (1992–98) output volatility is mostly associated with shocks to domestic factors, but the slowdown in the subperiod 1998–99 is explained more than 60 percent by shocks to the external factors.

This paper — a product of the Economic Policy Sector Unit and the Poverty Reduction and Economic Management Sector Unit, Latin America and Caribbean Regional Office — is part of a larger effort to understand output fluctuations and growth in the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cristina Palarca, room I8-165, telephone 202-473-5328, fax 202-522-2119, email address [cpalarca@worldbank.org](mailto:cpalarca@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [gperry@worldbank.org](mailto:gperry@worldbank.org) or [nquintero@worldbank.org](mailto:nquintero@worldbank.org). (62 pages)

### 2334. Sex Workers and the Cost of Safe Sex: The Compensating Differential for Condom Use in Calcutta

Vijayendra Rao, Indrani Gupta, and Smarajit Jana  
(May 2000)

*Prostitution is often called the world's oldest profession, yet economists almost never study it. The practice of safe sex by commercial sex workers is considered central to preventing the transmission of AIDS in developing countries — yet sex workers in Calcutta who regularly use condoms suffer a 79 percent loss in their average earnings per sex act.*

The practice of safe sex by commercial sex workers is considered central to preventing the transmission of AIDS in developing countries. Rao, Gupta, and Jana estimate the compensating differential for condom use among sex workers in Calcutta, based on results from a survey conducted in 1993.

If, as suggested by anecdotal evidence, this loss in income is large, it would indicate the existence of strong disincentives for practicing safe sex.

To identify the relationship between condom use and the average price per sex act, they follow an instrumental variable approach, exploiting an intervention program focused on providing information about the AIDS virus and about safe sex practices. The program, instituted in 1992, was not systematically administered.

Using this method, they found that sex workers who always use condoms face a loss of 79 percent in the average earnings per sex act.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to understand the behavior underlying HIV/AIDS transmission. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address [psader@worldbank.org](mailto:psader@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Vijayendra Rao may be contacted at [vr Rao@worldbank.org](mailto:vr Rao@worldbank.org). (18 pages)

### 2335. Inflation and the Poor

William Easterly and Stanley Fischer  
(May 2000)

*The poor suffer more from inflation than the rich do, reveals this survey of poor people in 38 countries.*

Using polling data for 31,869 households in 38 countries and allowing for country effects, Easterly and Fischer show that the poor are more likely than the rich to mention inflation as a top national concern. This result survives several robustness checks.

Also, direct measures of improvements in well-being for the poor — the change in their share of national income, the percentage decline in poverty, and the percentage change in the real minimum wage — are negatively correlated with inflation in pooled cross-country samples.

High inflation tends to lower the share of the bottom quintile and the real minimum wage — and tends to increase poverty.

This paper — a joint product of Macroeconomics and Growth, Development Research Group, and the International Monetary Fund — is part of a larger effort to study the effects of macroeconomic policies on growth and poverty. Copies of this paper are available free from the World Bank, 1818 H Street, NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-1155, email address [klabrie@worldbank.org](mailto:klabrie@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). William Easterly may be contacted at [weasterly@worldbank.org](mailto:weasterly@worldbank.org). (31 pages)

### 2336. Endogenous Enforcement and Effectiveness of China's Pollution Levy System

Hua Wang and David Wheeler  
(May 2000)

*How well air and water pollution regulation is implemented depends very much on both the level of economic development and actual environmental quality. Pollution pricing is closer to the dictates of environmental economics than China's formal regulatory statutes would suggest — and there is considerable scope for using eco-*

*economic instruments to reduce China's industrial pollution problems.*

Wang and Wheeler investigate two aspects of China's pollution levy system, which was first implemented about 20 years ago.

First, they analyze what determines differences in enforcement of the pollution levy in various urban areas. They find that collection of the otherwise uniform pollution levy is sensitive to differences in economic development and environmental quality. Air and water pollution levies are higher in areas that are heavily polluted.

Second, they analyze the impact of pollution charges on industry's environmental performance, in terms of the pollution intensity of process production and the degree of end-of-pipe abatement for both water pollution and air pollution.

Econometric analysis shows that plants respond strongly to the levy by either abating air pollution in the production process or providing end-of-pipe treatment for water pollution.

This paper — a product of Infrastructure and Environment, Development Research Group — is part of a larger effort in the group to study environmental regulation in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Yasmin D'Souza, room MC2-622, telephone 202-473-1449, fax 202-522-3230, email address [ydsouza@worldbank.org](mailto:ydsouza@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [hwang1@worldbank.org](mailto:hwang1@worldbank.org) or [dwheeler1@worldbank.org](mailto:dwheeler1@worldbank.org). (27 pages)

### **2337. Pollution Charges, Community Pressure, and Abatement Cost of Industrial Pollution in China**

Hua Wang  
(May 2000)

*Community pressure may be as strong an incentive for industrial firms to control pollution in China as pollution levies are.*

Wang evaluates the strength of the effect that community pressure and pollution charges have on industrial pollution control in China and estimates the marginal cost of pollution abatement. He examines

a well-documented set of plant-level data, combined with community-level data, to assess the impact of pollution charges and community pressure on industrial behavior in China.

He constructs and estimates an industrial organic water pollution discharge model for plants that violate standards for pollution discharge, pay pollution charges, and are constantly under community pressure to further abate pollution.

He creates a model and estimates implicit prices for pollution discharges from community pressure, which are determined jointly by the explicit price, the pollution levy. He finds that the implicit discharge price is at least as high as the explicit price. In other words, community pressure not only exists but may be as strong an incentive as the pollution charge is for industrial firms to control pollution in China.

Wang's modeling approach also provides a way to estimate the marginal cost of pollution abatement. The empirical results show that the current marginal cost of abatement is about twice the effective charge rate in China.

This paper — a product of Infrastructure and Environment, Development Research Group — is part of a larger effort in the group to study environmental regulation in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Yasmin D'Souza, room MC2-622, telephone 202-473-1449, fax 202-522-3230, email address [ydsouza@worldbank.org](mailto:ydsouza@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [hwang1@worldbank.org](mailto:hwang1@worldbank.org). (27 pages)

### **2338. The Geography of International Investment**

Howard J. Shatz and Anthony J. Venables  
(May 2000)

*Multinationals have become increasingly important to the world economy. Overseas production by U.S. affiliates is three times U.S. exports, for example. Who is investing where, for sales where?*

Much foreign direct investment is between high-income countries, but investment in some developing and transition regions,

while still modest, grew rapidly in the 1990s.

Adjusting for market size, much investment stays close to home; adjusting for distance, much heads toward the countries with the biggest markets. Foreign direct investment is more geographically concentrated than either exports or production. Thus U.S. affiliate production in Europe is 7 times U.S. exports to Europe; that ratio drops to 4 for all industrial countries and to 1.6 for developing countries.

Multinational activity in high-income countries is overwhelmingly horizontal, involving production for sale to the host country market. In developing countries, a greater proportion of multinational activity is "vertical," involving manufacturing at intermediate stages of production. Thus only 4 percent of U.S. affiliate production in the European Union is sold back to the United States, whereas for developing countries the figure is 18 percent, rising to 40 percent for Mexico. Similarly, less than 10 percent of Japan's affiliate production in the EU is sold back to Japan, compared with more than 20 percent in developing countries.

In models of horizontal activity, the decision to go multinational is a tradeoff between the additional fixed costs involved in setting up a new plant and the savings in variable costs (transport costs and tariffs) on exports. In models of vertical activity, direct investment is motivated by differences in factor costs. Tariffs and transport costs both encourage vertical multinational activity (by magnifying differences in factor prices) and discourage it (by making trade between headquarters and an affiliate more expensive).

The major outward investors carry out much horizontal investment in large markets. For U.S. investors, this means Europe, especially the United Kingdom; for Japan and Europe, it means the United States. Most EU investments, however, stay within the EU.

The major outward investors carry out much of their vertical investment closer to home: the United States, in Mexico; the EU, in Central and Eastern Europe; Japan, in Asia.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to study the location of economic activity. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax

202-522-1159, email address [ltabada@worldbank.org](mailto:ltabada@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Anthony J. Venables may be contacted at [a.j.venables@lse.ac.uk](mailto:a.j.venables@lse.ac.uk). (27 pages)

### 2339. Building Subnational Debt Markets in Developing and Transition Economies: A Framework for Analysis, Policy Reform, and Assistance Strategy

Michel Noel  
(May 2000)

*Because of the trend toward decentralization in more than 70 countries where the World Bank is active, subnational entities — states, regions, provinces, counties, and municipalities, and the local utility companies owned by them — are now responsible for delivering services and investing in infrastructure. And infrastructure investments are growing rapidly to meet increasing urban demand. How should the World Bank Group help?*

Subnational debt markets can be a powerful force in a country's development. Through delegated monitoring by financial intermediaries and through debt placed directly with investors, subnational debt markets account for about 5 percent of GDP in Argentina and Brazil. But they remain embryonic in most developing and transition economies.

To resolve a potential clash between the increased financing needs of subnational entities and the limited development of domestic subnational debt markets, it is critical to support the orderly, efficient emergence of such debt markets.

As a framework for policy reform, the following steps (mirroring typical weaknesses) are prerequisites for developing a country's subnational debt market:

- Reducing moral hazard.
- Improving market transparency.
- Strengthening market governance.
- Establishing a level playing field.
- Developing local capacity for accounting, budgeting, and financial management.

In countries where the government shows a clear commitment to market development, says Noel, the IBRD should support the framework needed for policy-based operations that establish hard bud-

get constraints. In doing so, the IBRD should concentrate on (1) supporting national and local capacity building in those areas essential for developing a subnational debt market and (2) financing specific subnational projects with strictly nonrecourse loans.

At the same time, the World Bank Group should offer a variety of lending and guarantee instruments that encourage private financing for investments by subnational entities — including, for example, equity participation in (or lines of credit or partial credit guarantees to) financial intermediaries specializing in subnational investment finance or in funds for financing local infrastructure.

This paper — a product of the Private and Financial Sectors Development Unit, Europe and Central Asia Region — was prepared as background for a manual on policy issues relating to domestic debt markets. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Michel Noel, room H6-161, telephone 202-473-2581, fax 202-522-0073, email address [mnoel2@worldbank.org](mailto:mnoel2@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). (45 pages)

### 2340. Currency Substitution in Latin America: Lessons from the 1990s

Pere Gomis-Porqueras, Carlos Serrano,  
and Alejandro Somuano  
(May 2000)

*What causes currency substitution (foreign money substituting for domestic money)? What significance has it had in recent banking crises? And what is the relationship between currency conversion and macroeconomic volatility in Latin America?*

Gomis-Porqueras, Serrano, and Somuano study how agents in Latin America allocate their balances between dollar-denominated and domestic currency-denominated accounts. They empirically determine the causes of currency substitution, its significance in recent banking crises, and the link between currency substitution and volatility in macroeconomic aggregates.

Their findings: The ratio of dollar deposits to broad money is strongly influenced

by expectations of depreciation. They show that depositors in Latin America face some uncertainty and frictions when making their portfolio decisions.

They explore the macroeconomic consequences of a dollarized economy. In particular, they find that, in the presence of currency substitution, past banking crises are good predictors of future crises. In other words, having a highly dollarized economy increases the response of the banking system when there is a bad shock, which halts the outflow of capital. Once an economy is in a crisis, however, having more dollar-denominated deposits in the banking system increases the probability of a longer crisis in the future, because it increases exchange rate exposure in an already weak banking system.

Finally, they show that the volatility of macroeconomic variables linked to the financial system increases whenever the economy becomes more dollarized, which in turn makes the choice of monetary targets more difficult.

This paper — a product of Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region — is part of a larger effort in the region to understand the macroeconomic effects of dollarization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Marjorie Puentes, room I4-218, telephone 202-473-9621, fax 202-522-2086, email address [mpuentes@worldbank.org](mailto:mpuentes@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [gomis@eco.utexas.edu](mailto:gomis@eco.utexas.edu), [cserrano@worldbank.org](mailto:cserrano@worldbank.org), or [somuano@eco.utexas.edu](mailto:somuano@eco.utexas.edu). (31 pages)

### 2341. The Tyranny of Concepts: CUDIE (Cumulated, Depreciated Investment Effort) Is Not Capital

Lant Pritchett  
(May 2000)

*Using the word capital to represent two different concepts is not such a problem when government is responsible for only a small fraction of national investment and is reasonably effective (as in the United States). But when government is a major investor and is ineffective, the gap between capital and "cumulative, depreciated investment effort" (CUDIE) may be enormous. A pub-*

*lic sector steel mill may absorb billions as an "investment," but if it cannot produce steel it has zero value as capital.*

The cost of public investment is not the value of public capital. Unlike for private investors, there is no remotely plausible behavioral model of the government as investor that suggests that every dollar the public sector spends as "investment" creates capital in an economic sense.

This seemingly obvious point has so far been uniformly ignored in the voluminous empirical literature on economic growth, which uses, at best, "cumulated, depreciated investment effort" (CUDIE) to estimate capital stocks.

But in developing countries especially, the difference between investment cumulated at cost and capital value is of primary empirical importance: government investment is half or more of total investment. And perhaps as much as half or more of government investment spending has not created equivalent "capital."

This suggests that nearly everything empirical written in three broad areas is misguided.

First, none of the estimates of the impact of public spending identify the productivity of public capital. Even where public capital could be very productive, regressions and evaluations may suggest that public investment spending has little impact.

Second, everything currently said about "total factor productivity" in developing countries is deeply suspect, as there is no way empirically to distinguish between low output (or growth) attributable to investments that created no "factors" and low output (or growth) attributable to low (or slow growth in) productivity in using accumulated "factors."

Third, multivariate growth regressions to date have not, in fact, "controlled" for the growth of capital stock, so spurious interpretations have emerged.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to understand the importance of public sector actions for economic growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Retno Widuri, email address [rwiduri@worldbank.org](mailto:rwiduri@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be con-

tacted at [lpritchett@worldbank.org](mailto:lpritchett@worldbank.org). (40 pages)

## 2342. What Can We Learn about Country Performance from Conditional Comparisons across Countries?

Martin Ravallion  
(May 2000)

*Existing methods for assessing latent country or institutional performance can yield deceptive results.*

There have been many attempts to infer latent performance attributes of governments (or other institutions) from conditional comparisons that control for observed variables. Success in doing so could greatly improve government performance.

Ravallion critically reviews the econometric foundations of the methods used. He argues that latent heterogeneity remains a fundamental but unresolved problem.

Locating a benchmark for measuring performance adds a further problem. Current methods do not yield a consistent estimate of even the mean latent performance attribute. An assessment of country performance by these methods could well be wildly wrong.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to assess and improve methods for monitoring and assessing country performance. The study was funded by the Bank's Research Support Budget under the research project "Policies for Poor Areas" (RPO 681-39). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC4-773, telephone 202-473-3902, fax 202-522-1153, email address [psader@worldbank.org](mailto:psader@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [mravallion@worldbank.org](mailto:mravallion@worldbank.org). (23 pages)

## 2343. Ownership and Performance of Lithuanian Enterprises

David A. Grigorian  
(May 2000)

*Does private ownership improve on corporate performance in a developing institu-*

*tional environment? In Lithuania commercial transfer of state property to private owners has significantly improved enterprises' revenue and export performance.*

Grigorian presents some evidence of improved corporate performance in Lithuania for the period 1995–97. His question: Were these improvements in any way caused by privatization and changes in the environment in which enterprises operate?

He presents evidence of correlation between ownership and enterprise performance as measured by increased revenues and improved export performance. Controlling for preselection bias increases the magnitude and significance of private share ownership, which indicates negative selection bias at privatization. On the other hand, (expected) subsidies seem to contribute negatively to enterprise performance. However, the study finds no clear evidence of the effect of market competition on performance indicators in the short run.

Grigorian's is the first study to analyze the consequences of commercial (as opposed to mass) privatization in Central and Eastern European countries.

This paper — a product of the Private and Financial Sectors Development Sector Unit, Europe and Central Asia Region — is part of a larger effort in the region to study enterprise restructuring in transition. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Darlene Brown, room H6-084, telephone 202-473-3542, fax 202-522-0073, email address [dbrown@worldbank.org](mailto:dbrown@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [dgrigorian@worldbank.org](mailto:dgrigorian@worldbank.org). (40 pages)

## 2344. Designing Direct Subsidies for Water and Sanitation Services Panama: A Case Study

Vivien Foster, Andrés Gómez-Lobo,  
and Jonathan Halpern  
(May 2000)

*An alternative to traditional subsidies for water and sanitation services is direct subsidies — funds governments provide to cover part of the water bill for households that meet certain criteria. Issues associated*

*with such a subsidy are analyzed through a case study of Panama.*

As an alternative to traditional subsidy schemes in utility sectors, direct subsidy programs have several advantages: they are transparent, they are explicit, and they minimize distortions of the behavior of both the utility and the customers. At the same time, defining practical eligibility criteria for direct subsidy schemes is difficult and identifying eligible households may entail substantial administrative costs.

Foster, Gómez-Lobo, and Halpern, using a case study from Panama, discuss some of the issues associated with the design of direct subsidy systems for water services. They conclude that:

- There is a need to assess — rather than assume — the need for a subsidy. A key test of affordability, and thus of the need for a subsidy, is to compare the cost of the service with some measure of household willingness to pay.

- The initial assessment must consider the affordability of connection costs as well as the affordability of the service itself. Connection costs may be prohibitive for poor households with no credit, suggesting a need to focus subsidies on providing access rather than ongoing water consumption.

- A key issue in designing a direct subsidy scheme is its targeting properties. Poverty is a complex phenomenon and difficult to measure. Eligibility must therefore be based on easily measurable proxy variables, and good proxies are hard to find. In choosing eligibility criteria for a subsidy, it is essential to verify what proportion of the target group fails to meet the criteria (errors of exclusion) and what proportion of nontarget groups is inadvertently eligible for the benefits (errors of inclusion).

- Administrative costs are roughly the same no matter what the level of individual subsidies, so a scheme that pays beneficiaries very little will tend not to be cost-effective. It is important to determine what proportion of total program costs will be absorbed by administrative expenses.

- Subsidies should not cover the full cost of the service and should be contingent on beneficiaries paying their share of the bill. Subsidies for consumption above a minimum subsistence level should be avoided. Subsidies should be provided long enough before eligibility is reassessed to avoid “poverty trap” problems.

- The utility or concessionaire can be helpful in identifying eligible candidates because of its superior information on the payment histories of customers. It will also have an incentive to do so, since it has an interest in improving poor payment records. Thought should therefore be given at the design stage to the role of the service provider in the implementation of the subsidy scheme.

- The administrative agency’s responsibilities, the sources of funding, and the general principles guiding the subsidy system should have a clear legal basis, backed by regulations governing administrative procedures.

- To reduce administrative costs and avoid duplication of effort, it would be desirable for a single set of institutional arrangements to be used to determine eligibility for all welfare and subsidy programs in a given jurisdiction, whether subnational or national.

This paper — a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region — is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services and to enhance access of the poor to these basic services. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Silvia Delgado, room I5-196, telephone 202-473-7840, fax 202-676-1821, email address [sdelgado@worldbank.org](mailto:sdelgado@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [vfoster@worldbank.org](mailto:vfoster@worldbank.org) or [jhalpern@worldbank.org](mailto:jhalpern@worldbank.org). (29 pages)

### 2345. Information and Modeling Issues in Designing Water and Sanitation Subsidy Schemes

Andrés Gómez-Lobo, Vivien Foster  
Jonathan Halpern  
(May 2000)

*Evaluating design alternatives is a first step in introducing optimal water subsidy schemes. The definition of appropriate targeting criteria and subsidy levels needs to be supported by empirical analysis, generally an informationally demanding exercise. An assessment carried out in Panama revealed that targeting indi-*

*vidual households would be preferable to geographically based targeting. Empirical analysis also showed that only a small group of very poor households needed a subsidy to pay their water bill.*

In designing a rational scheme for subsidizing water services, it is important to support the choice of design parameters with empirical analysis that simulates the impact of subsidy options on the target population. Otherwise, there is little guarantee that the subsidy program will meet its objectives.

But such analysis is informationally demanding. Ideally, researchers should have access to a single, consistent data set containing household-level information on consumption, willingness to pay, and a range of socioeconomic characteristics. Such a comprehensive data set will rarely exist. Gómez-Lobo, Foster, and Halpern suggest overcoming this data deficiency by collating and imaginatively manipulating different sources of data to generate estimates of the missing variables.

The most valuable sources of information, they explain, are likely to be the following:

- Customer databases of the water company, which provide robust information on the measured consumption of formal customers but little information on unmeasured consumption, informal customers, willingness to pay, or socioeconomic variables.

- General socioeconomic household surveys, which are an excellent source of socioeconomic information but tend to record water expenditure rather than physical consumption.

- Willingness-to-pay surveys, which are generally tailored to a specific project, are very flexible, and may be the only source of willingness-to-pay data. However, they are expensive to undertake and the information collected is based on hypothetical rather than real behavior. Where such surveys are unavailable, international benchmark values on willingness to pay may be used.

Combining data sets requires some effort and creativity, and creates difficulties of its own. But once a suitable data set has been constructed, a simulation model can be created using simple spreadsheet software. The model used to design Panama’s water subsidy proposal addressed these questions:

- What are the targeting properties of different eligibility criteria for the subsidy?



- How large should the subsidy be?
- How much will the subsidy scheme cost, including administrative costs?

Armed with the above information, policymakers should be in a position to design a subsidy program that reaches the intended beneficiaries, provides them with the level of financial support that is strictly necessary, meets the overall budget restrictions, and does not waste an excessive amount of funding on administrative costs.

This paper — a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region — is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services and to enhance the access of the poor to these basic services. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Silvia Delgado, room I5-196, telephone 202-473-7840, fax 202-676-1821, email address [sdelgado@worldbank.org](mailto:sdelgado@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [vfoster@worldbank.org](mailto:vfoster@worldbank.org) or [jhalpern@worldbank.org](mailto:jhalpern@worldbank.org). (35 pages)

### 2346. The Middle Class Consensus and Economic Development

William Easterly  
(May 2000)

*A higher share of income for the middle class and lower ethnic polarization are empirically associated with higher income, higher growth, more education, better health, better infrastructure, better economic policies, less political instability, less civil war (putting ethnic minorities at risk), more social "modernization," and more democracy.*

Modern political economy stresses "society's polarization" as a determinant of development outcomes. Among the most common forms of social conflict are class polarization and ethnic polarization.

A middle class consensus is defined as a high share of income for the middle class and a low degree of ethnic polarization. A middle class consensus distinguishes development successes from failures.

A theoretical model shows how groups— distinguished by class or

ethnicity — will under-invest in human capital and infrastructure when there is "leakage" to another group.

Easterly links the existence of a middle class consensus to exogenous country characteristics such as resource endowments, along the lines of the provocative thesis of Engerman and Sokoloff 1997 that tropical commodity exporters are more unequal than other societies.

Easterly confirms this hypothesis with cross-country data. This makes it possible to use resource endowments as instruments for inequality.

A higher share of income for the middle class and lower ethnic polarization are empirically associated with higher income, higher growth, more education, better health, better infrastructure, better economic policies, less political instability, less civil war (putting ethnic minorities at risk), more social "modernization," and more democracy.

This paper — a product of Macroeconomics and Growth, Development Research Group — is part of a larger effort in the group to study the determinants of growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-3518, email address [klabrie@worldbank.org](mailto:klabrie@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [weasterly@worldbank.org](mailto:weasterly@worldbank.org). (41 pages)

### 2347. Terror as a Bargaining Instrument: A Case Study of Dowry Violence in Rural India

Francis Bloch and Vijayendra Rao  
(May 2000)

*Some aspects of violent behavior are linked to economic incentives and deserve more attention from economists. In India, for example, domestic violence is used as a bargaining instrument, to extract larger dowries from a wife's family, after the marriage has taken place.*

Bloch and Rao examine how domestic violence may be used as a bargaining instrument, to extract larger dowries from a spouse's family. The phrase "dowry violence" refers not to the dowry paid at the time of the wedding, but to additional

payments demanded by the groom's family after the marriage. The additional dowry is often paid to stop the husband from systematically beating the wife.

Bloch and Rao base their case study of three villages in southern India on qualitative and survey data. Based on the ethnographic evidence, they develop a noncooperative bargaining and signaling model of dowries and domestic violence. They test the predictions from those models on survey data.

They find that women whose families pay smaller dowries suffer increased risk of marital violence. So do women who come from richer families (from whom resources can more easily be extracted). Larger dowries — as well as greater satisfaction with the marriage (in the form of more male children) — reduce the probability of violence.

In India marriage is almost never a matter of choice for women, but is driven almost entirely by social norms and parental preferences. Providing opportunities for women outside of marriage and the marriage market would significantly improve their well-being by allowing them to leave an abusive husband, or find a way of "bribing" him to stop the abuse, or present a credible threat, which has the same effect.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to examine crime and violence in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address [psader@worldbank.org](mailto:psader@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Vijayendra Rao may be contacted at [vr Rao@worldbank.org](mailto:vr Rao@worldbank.org). (29 pages)

### 2348. Taxing Issues with Privatization: A Checklist

Jack M. Mintz, Duanjie Chen,  
and Evangelia Zorotheos  
(May 2000)

*The literature on privatization has overlooked how the tax status of the company to be privatized will affect the firm's, and the country's, financial transition.*



Privatization has been a popular strategy for improving efficiency in both market and transition economies. The literature on privatization includes broad discussions of pricing techniques but overlooks tax issues.

In reality, a state-owned company loses its privilege of paying no taxes once it is privatized. This change in tax status would certainly complicate the financial transition of a newly privatized company, affect industrywide economic efficiency, and change the revenue pattern of governments.

Using Ontario Hydro and the Canadian tax regime as examples, Mintz, Chen, and Zorotheos provide policymakers with a checklist on tax issues under privatization. Their main observations:

- The tax status of the company to be privatized must be considered in analyzing the firm's financial transition.
- The economic efficiency targeted by privatization may depend partly on the tax regime for a particular industry.
- Privatization affects government revenue through the revenue-sharing structure determined by intergovernmental fiscal relationships and cross-border tax arrangements.

Time is a factor in tax and transition issues. At the time of privatization, for example, how are assets to be valued for calculating capital gains and cost deductions, for tax purposes? Are the assets transferred to the new owners at fair market value, book value, or at cost, for tax purposes? How should heavy debt loads be treated?

Ontario Hydro will not be privatized but it will become taxable. How the taxes will be paid will depend on how the transition is treated. Tax policy will be a key determinant of the industry's future development.

This paper — a product of the Governance, Regulation, and Finance Division, World Bank Institute — is part of a larger effort in the institute to increase understanding of infrastructure regulation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Gabriela Chenet-Smith, room J3-147, telephone 202-473-6370, fax 202-676-9874, email address [gchenet@worldbank.org](mailto:gchenet@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). (39 pages)

### 2349. Trade, Foreign Direct Investment, and International Technology Transfer: A Survey

Kamal Saggi  
(May 2000)

*How much a developing country can take advantage of technology transfer from foreign direct investment depends partly on how well educated and well trained its workforce is, how much it is willing to invest in research and development, and how much protection it offers for intellectual property rights.*

Saggi surveys the literature on trade and foreign direct investment — especially wholly owned subsidiaries of multinational firms and international joint ventures — as channels for technology transfer. He also discusses licensing and other arm's-length channels of technology transfer. He concludes:

- How trade encourages growth depends on whether knowledge spillover is national or international. Spillover is more likely to be national for developing countries than for industrial countries.
- Local policy often makes pure foreign direct investment infeasible, so foreign firms choose licensing or joint ventures. The jury is still out on whether licensing or joint ventures lead to more learning by local firms.

- Policies designed to attract foreign direct investment are proliferating. Several plant-level studies have failed to find positive spillover from foreign direct investment to firms competing directly with subsidiaries of multinationals. (However, these studies treat foreign direct investment as exogenous and assume spillover to be horizontal — when it may be vertical.) All such studies do find the subsidiaries of multinationals to be more productive than domestic firms, so foreign direct investment does result in host countries using resources more effectively.

- Absorptive capacity in the host country is essential for getting significant benefits from foreign direct investment. Without adequate human capital or investments in research and development, spillover fails to materialize.

- A country's policy on protection of intellectual property rights affects the type of industry it attracts. Firms for which such rights are crucial (such as pharmaceutical firms) are unlikely to in-

vest directly in countries where such protections are weak, or will not invest in manufacturing and research and development activities. Policy on intellectual property rights also influences whether technology transfer comes through licensing, joint ventures, or the establishment of wholly owned subsidiaries.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to study microfoundations of international technology diffusion. The study was funded by the Bank's Research Support Budget under the research project "Microfoundations of International Technology Diffusion." Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address [abonfield@worldbank.org](mailto:abonfield@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [ksaggi@mail.smu.edu](mailto:ksaggi@mail.smu.edu). (45 pages)

### 2350. Multilateral Trade Liberalization, Political Disintegration, and the Choice of Free Trade Areas versus Customs Unions

Maurice Schiff  
(May 2000)

*Two theories are combined to explain why free trade areas (FTAs) have proliferated more than customs unions (CUs) have, and why FTAs are found more in North-South agreements and CUs in South-South agreements.*

Schiff combines two theories — one about how multilateral trade liberalization affects regional integration, the other about how it affects political disintegration — to explain why the ratio of free trade areas to customs unions has increased over time, and why it is larger in North-South than in South-South agreements.

Ethier (1998, 1999) argues that multilateral trade liberalization led to the recent wave of regional integration arrangements.

Alesina and others (1997), in discussing the number and size of countries, argue that multilateral trade liberalization leads to political disintegration, with an increase in the number of countries.

Combining the two arguments, Schiff hypothesizes that as multilateral trade liberalization proceeds and the number of regional integration arrangements increases, the ratio of free trade areas to customs unions also increases. The same arguments are also used to show why that ratio is larger in North-South than in South-South agreements. The data, which show that ratio increasing in the 1990s and larger for North-South agreements, are consistent with the hypotheses.

Finally, a number of voluntary and involuntary customs unions are examined where weaker members lose and conflict does or does not take place, and where free trade agreements are superior.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to study regional integration. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [mschiff@worldbank.org](mailto:mschiff@worldbank.org). (23 pages)

### 2351. Environmental Policy and Time Consistency: Emissions Taxes and Emissions Trading

Peter W. Kennedy and Benoît Laplante  
(May 2000)

*As instruments for controlling pollution, how do emissions taxes and emissions trading compare in terms of the incentives they create to adopt cleaner technologies? Emissions taxes may have a slight advantage over emissions trading.*

Kennedy and Laplante examine policy problems related to the use of emissions taxes and emissions trading, two market-based instruments for controlling pollution by getting regulated firms to adopt cleaner technologies. By attaching an explicit price to emissions, these instruments give firms an incentive to continually reduce their volume of emissions.

Command-and-control emissions standards create incentives to adopt cleaner technologies only up to the point where the standards are no longer binding (at which point the shadow price on emissions falls to zero).

But the ongoing incentives created by market-based instruments are not necessarily right, either. Time-consistency constraints on the setting of these instruments limit the regulator's ability to set policies that lead to efficiency in adopting technology options.

After examining the time-consistency properties of a Pigouvian emissions tax and of emissions trading, Kennedy and Laplante find that:

- If damage is linear, efficiency in adopting technologies involves either universal adoption of the new technology or universal retention of the old technology, depending on the cost of adoption. The first-best tax policy and the first-best permit-supply policy are both time-consistent under these conditions.

- If damage is strictly convex, efficiency may require partial adoption of the new technology. In this case, the first-best tax policy is not time-consistent and the tax rate must be adjusted after adoption has taken place (ratcheting). Ratcheting will induce an efficient equilibrium if there is a very large number of firms. If there are relatively few firms, ratcheting creates too many incentives to adopt the new technology.

- The first-best supply policy is time-consistent if there is a very large number of firms. If there are relatively few firms, the first-best supply policy may not be time-consistent, and the regulator must ratchet the supply of permits. With this policy, there are not enough incentives for firms to adopt the new technology.

The results do not strongly favor one policy instrument over the other, but if the point of an emissions trading program is to increase technological efficiency, it is necessary to continually adjust the supply of permits in response to technological change, even when damage is linear.

This continual adjustment is not needed for an emissions tax when damage is linear, which may give emissions taxes an advantage over emissions trading.

This paper — a product of Infrastructure and Environment, Development Research Group — is part of a larger effort in the group to study the economics of pollution control. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Yasmin D'Souza, room MC2-622, telephone 202-473-1449, fax 202-522-3230, email address [ydsouza@worldbank.org](mailto:ydsouza@worldbank.org). Policy Research Working Papers are also posted on the Web at

[www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Benoît Laplante may be contacted at [blaplante@worldbank.org](mailto:blaplante@worldbank.org). (42 pages)

### 2352. How Stronger Patent Protection in India Might Affect the Behavior of Transnational Pharmaceutical Industries

Carsten Fink  
(May 2000)

*How will stronger patent rights in developing countries affect transnational corporations' behavior in and toward those countries? How will market structure and consumer welfare be affected by extending patent protection to products that could previously be freely imitated? Will research-based transnational corporations devote more resources to developing technologies relevant to needs in developing countries?*

To address questions about how stronger patent rights will affect India's pharmaceutical industry, Fink simulates the effects of introducing such protection — as required by the World Trade Organization Agreement on Trade-Related Intellectual Property Rights (TRIPs) — on market structure and static consumer welfare. (India must amend its current patent regime by 2005 and establish a transitional regime in the meanwhile.)

The model Fink uses accounts for the complex demand structure for pharmaceutical goods. Consumers can choose among various drugs available to treat a specific disease. And for each drug, they have a choice among various differentiated brands.

Fink calibrates the model for two groups of drugs — quinolones and synthetic hypotensives — using 1992 brand-level data. In both groups, a subset of all available drugs was patent-protected in Western Europe but not India, where Indian manufacturers freely imitated them.

The simulation analysis asks how the market structure for the two groups of drugs would have looked if India had granted patents for drugs. It does not take account of the fact that stronger patent protection will not apply to existing drugs and that the Indian government might be able to restrain high drug prices by imposing price controls or granting compulsory licenses.

Still, Fink concludes that if future drug discoveries are mainly new varieties of already existing therapeutic treatments, the effect of stronger patent protection is likely to be small. If newly discovered drugs are medicinal breakthroughs, however, prices may rise significantly above competitive levels and static welfare losses may be large.

If demand is highly price-elastic, as is likely in India, profits for transnational corporations are likely to be small. But if private health insurance is permitted in India, reducing the price-sensitivity of demand, patent-holders' profits could increase substantially. In light of the fact that the TRIPS Agreement strengthens patent rights in most developing countries, pharmaceutical companies may do more research on, for example, tropical diseases.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to investigate the economic consequences of multilateral trade agreements. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at cfink@worldbank.org. (45 pages)

### 2353. The São Mateus–Jabaquara Trolleybusway Concession in Brazil

Jorge Rebelo and Pedro Machado  
(May 2000)

*To replace a diesel bus busway operated under a management contract by the state with an electric trolley busway, São Paulo State in Brazil designed and implemented a concession to the private sector. According to independent user surveys, service under the concession has been satisfactory.*

Rebelo and Machado describe how São Paulo State granted a 20-year concession for operating a busway, one requirement for which was that the concessionaire replace the diesel bus operation with electric traction (trolleys). This was not a "greenfield concession" but is probably the only "busway" concession undertaken so far worldwide.

With roughly 16,000 buses fighting their way through heavy traffic under traffic policies geared to automobiles, bus service was slow and unreliable. Then São Paulo adopted certain practices aimed at improving bus operations. Between 1983 and 1987, it implemented a segregated trolleybus corridor between São Mateus and Jabaquara, to be operated as a private concession regulated by the state of São Paulo.

The concession was to operate for 20 years but the winning consortium had to invest in only part of the equipment, because part of it was in place. This made things less risky for the private consortium and allowed the state to complete an environmentally friendly project with the help of the private sector. The concession has so far been a success — an example to be followed.

After an initial increase, demand for the busway began to fall in 1998 and 1999. This was part of a general decline in demand for the bus system because of:

- A drop in jobs resulting from the economic slowdown.
- A growth in the use of automobiles.
- Competition from illegal buses (vans), which offer door-to-door service.

The state was late in completing the aerial network for the trolleyway and rehabilitating sections of the roadway. This delayed replacement of diesel buses by trolleybuses. State representatives indicated it might be better in future to find a mechanism through which the concessionaire instead of the state would undertake infrastructure works and would also handle administration of integration terminals.

This paper — a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region — is part of a larger effort in the region to promote private sector operation and investment in transport. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Solange Van Veldhuizen, room I5-002, telephone 202-473-8722, fax 202-676-9594, email address [svanveldhuizen@worldbank.org](mailto:svanveldhuizen@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Jorge Rebelo may be contacted at [jrebelo@worldbank.org](mailto:jrebelo@worldbank.org). (12 pages)

### 2354. When the Bureaucrats Move out of Business: A Cost-Benefit Assessment of Labor Retrenchment in China

Yi Chen and Ishac Diwan  
(May 2000)

*Reformers of China's state enterprises should realize that more could be realized from capital transfer than is being gained from labor retrenchment. And more efficient capital allocation, by reducing the pressure on labor, would bring larger gains at a lower social cost.*

Chen and Diwan estimate the costs and benefits of labor retrenchment in state-owned industrial enterprises in China. Their results indicate the prevalence of low and stagnant labor productivity, low capital productivity, and excessively high wages in the state sector for the period reviewed (1994–97).

The private sector exhibited consistently greater productivity.

The authors' most striking finding: A greater gain could be realized from capital transfer than is being gained from labor retrenchment.

Their simulation results for 1996 estimate that 43 percent of the workers in state enterprises and 70 percent of the capital are redundant. By itself, a transfer of labor from the public to the private sector at the current magnitude (20 percent of the labor force) would secure only 2 percent gains in output. A transfer of 10 percent of both capital and labor would achieve a greater efficiency gain than transferring the full 43 percent of redundant workers. This is partly because the private sector uses capital more efficiently than the public sector and partly because it needs capital to hire workers transferred from the public sector.

Their results suggest that reform in state enterprises should concentrate more on the efficiency of capital allocation, not just on labor retrenchment. More efficient capital allocation would reduce the pressure on labor and would bring larger gains at a lower social cost.

This paper — a product of the Economic Policy and Poverty Reduction Division, World Bank Institute — is part of a larger effort in the institute to study the architecture of reform. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mona Yafi, room J4-158,

telephone 202-473-4649, fax 202-676-9810, email address [myafi@worldbank.org](mailto:myafi@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [ychen@dol.eta.gov](mailto:ychen@dol.eta.gov) or [idiwan@worldbank.org](mailto:idiwan@worldbank.org). (39 pages)

### 2355. Greed and Grievance in Civil War

Paul Collier and Anke Hoeffler  
(May 2000)

*Of the 27 major armed conflicts that occurred in 1999, all but two took place within national boundaries. As an impediment to development, internal rebellion especially hurts the world's poorest countries. What motivates civil wars? Greed or grievance?*

Collier and Hoeffler compare two contrasting motivations for rebellion: greed and grievance. Most rebellions are ostensibly in pursuit of a cause, supported by a narrative of grievance. But since grievance assuagement through rebellion is a public good that a government will not supply, economists predict such rebellions would be rare.

Empirically, many rebellions appear to be linked to the capture of resources (such as diamonds in Angola and Sierra Leone, drugs in Colombia, and timber in Cambodia). Collier and Hoeffler set up a simple rational choice model of greed-rebellion and contrast its predictions with those of a simple grievance model.

Some countries return to conflict repeatedly. Are they conflict-prone or is there a feedback effect whereby conflict generates grievance, which in turn generates further conflict? The authors show why such a feedback effect might be present in both greed-motivated and grievance rebellions.

The authors' results contrast with conventional beliefs about the causes of conflict. A stylized version of conventional beliefs would be that grievance begets conflict, which begets grievance, which begets further conflict. With such a model, the only point at which to intervene is to reduce the level of objective grievance.

Collier and Hoeffler's model suggests that what actually happens is that opportunities for predation (controlling primary commodity exports) cause conflict and the grievances this generates induce dias-

poras to finance further conflict. The point of policy intervention here is to reduce the absolute and relative attraction of primary commodity predation and to reduce the ability of diasporas to fund rebel movements.

This paper — a product of the Development Research Group — is part of a larger effort in the group to study civil war and criminal violence. For more on this effort, go to [www.worldbank.org/research/conflict](http://www.worldbank.org/research/conflict). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Audrey Kitson-Walters, room MC3-527, telephone 202-473-3712, fax 202-522-1150, email address [akitsonwalters@worldbank.org](mailto:akitsonwalters@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Paul Collier may be contacted at [pcollier@worldbank.org](mailto:pcollier@worldbank.org). (44 pages)

### 2356. Bureaucratic Delegation and Political Institutions: When Are Independent Central Banks Irrelevant?

Philip Keefer and David Stasavage  
(June 2000)

*Does delegation of policymaking authority to independent agencies improve policy outcomes? This paper reports new theory and tests related to delegation of monetary policy to an independent central bank. The authors find that delegation reduces inflation only under specific institutional and political conditions.*

The government's ability to credibly commit to policy announcements is critical to the successful implementation of economic policies as diverse as capital taxation and utilities regulation. One frequently advocated means of signaling credible commitment is to delegate authority to an agency that will not have an incentive to opportunistically change policies once the private sector has taken such steps as signing wage contracts or making irreversible investments.

Delegating authority is suggested as a government strategy particularly for monetary policy. And existing work on the independence of central banks generally assumes that government decisions to delegate are irrevocable. But delegation — in monetary policy as elsewhere — is

inevitably a political choice, and can be reversed, contend Keefer and Stasavage.

They develop a model of monetary policy that relaxes the assumption that monetary delegation is irreversible. Among the testable predictions of the model are these:

- The presence of an independent central bank should reduce inflation only in the presence of political checks and balances. This effect should be evident in both developing and industrial countries.
- Political actions to interfere with the central bank should be more apparent when there are few checks and balances.
- The effects of checks and balances should be more marked when political decisionmakers are more polarized.

The authors test these predictions and find extensive empirical evidence to support each of the observable implications of their model: Central banks are associated with better inflation outcomes in the presence of checks and balances. The turnover of central bank governors is reduced when governors have tenure protections supported by political checks and balances. And the effect of checks and balances is enhanced in more polarized political environments.

This paper — a product of Regulation and Competition Policy, Development Research Group — is part of a larger effort in the group to identify the conditions under which regulatory reforms can be effective. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address [psintimaboagye@worldbank.org](mailto:psintimaboagye@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [pkeefe@worldbank.org](mailto:pkeefe@worldbank.org) or [d.stasavage@lse.ac.uk](mailto:d.stasavage@lse.ac.uk). (48 pages)

### 2357. Evaluating Carbon Offsets from Forestry and Energy Projects: How Do They Compare?

Kenneth M. Chomitz  
(June 2000)

*Under the Clean Development Mechanism, developing countries will be able to produce certified emissions reductions (CERs, sometimes called "offsets") through projects that reduce greenhouse gas emis-*

*sions below business-as-usual levels. The challenges of setting up offset markets are considerable. Do forestry projects, as a class, have more difficulty than energy projects reducing greenhouse gas emissions in ways that are real, measurable, additional, and consistent with sustainable development?*

Under the Kyoto Protocol, industrial countries accept caps on their emissions of greenhouse gases. They are permitted to acquire offsetting emissions reductions from developing countries — which do not have emissions limitations — to assist in complying with these caps. Because these emissions reductions are defined against a hypothetical baseline, practical issues arise in ensuring that the reductions are genuine. Forestry-related emissions reduction projects are often thought to present greater difficulties in measurement and implementation than energy-related emissions reduction projects.

Chomitz discusses how project characteristics affect the process for determining compliance with each of the criteria for qualifying. Those criteria are:

- *Additionality.* Would the emissions reductions not have taken place without the project?
- *Baseline and systems boundaries (leakage).* What would business-as-usual emissions have been without the project? And in this comparison, how broad should spatial and temporal system boundaries be?
- *Measurement (or sequestration).* How accurately can we measure actual with-project emissions levels?
- *Duration or permanence.* Will the project have an enduring mitigating effect?
- *Local impact.* Will the project benefit its neighbors?

For all the criteria except permanence, it is difficult to find generic distinctions between land use change and forestry and energy projects, since both categories comprise diverse project types. The important distinctions among projects have to do with such things as:

- The level and distribution of the project's direct financial benefits.
- How much the project is integrated with the larger system.
- The project components' internal homogeneity and geographic dispersion.
- The local replicability of project technologies.

Permanence is an issue specific to land use change and forestry projects. Chomitz

describes various approaches to ensure permanence or adjust credits for duration: the ton-year approach (focusing on the benefits from deferring climatic damage, and rewarding longer deferral); the combination approach (bundling current land use change and forestry emissions reductions with future reductions in the buyer's allowed amount); a technology-acceleration approach; and an insurance approach.

This paper — a product of Infrastructure and Environment, Development Research Group — is part of a larger effort in the group to assess policies for mitigating climate change. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joseph Ancrum, room MC2-522, telephone 202-473-3512, fax 202-522-3230, email address [jancrum@worldbank.org](mailto:jancrum@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [kchomitz@worldbank.org](mailto:kchomitz@worldbank.org). (25 pages)

### 2358. Why Infrastructure Financing Facilities Often Fall Short of Their Objectives

Daniela Klingebiel and Jeff Ruster  
(June 2000)

*To encourage the private funding and provision of infrastructure services, governments have used specialized financing facilities to offer financial support to investors. A study of five cases shows that these facilities have often fallen short of their objectives, for two main sets of reasons. First, the environment was not conducive to private participation in infrastructure. And second, the facility was faulty in design.*

To encourage the private funding and provision of infrastructure services, governments have used specialized financing facilities to offer financial support to investors, often in the form of grants, soft loans, or guarantees.

Klingebiel and Ruster present case studies of infrastructure financing facilities in various stages of development in Colombia, India, and Pakistan. They also present case studies of government-sponsored financing facilities (not of infrastructure) in Argentina and Moldova.

They find that these facilities have often fallen short of their objectives for two main sets of reasons. First, the environment was not conducive to private participation in infrastructure because of poor sector policies, an unstable macroeconomic environment, and inadequate financial sector policies, among other reasons. Second, the facility was faulty in design — in terms of sectors targeted, pricing of instruments, and consistency of objectives and instruments.

This paper — a product of Private Participation in Infrastructure, Private Sector Development Department — is part of a larger effort in the department to examine government policies in infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mina Salehi, room I10-118, telephone 202-473-7157, fax 202-522-2029, email address [msalehi@worldbank.org](mailto:msalehi@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). Daniela Klingebiel may be contacted at [dklingebiel@worldbank.org](mailto:dklingebiel@worldbank.org). (38 pages)

### 2359. Reducing Carbon Dioxide Emissions through Joint Implementation of Projects

Will Martin  
(June 2000)

*Most proposals for joint implementation of energy projects emphasize installing more technically efficient capital equipment to allow reduced energy use for any given mix of input and output. But increases in energy efficiency are likely to have second-round effects. Reducing energy demand, for example, will reduce the market price of energy and stimulate energy use, partially offsetting the initial reduction in demand. These effects are likely to be substantially larger in the long run, reducing the magnitude of these offsets.*

Efficient reduction of carbon dioxide emissions requires coordination of international efforts. Approaches proposed include carbon taxes, emission quotas, and jointly implemented energy projects.

To reduce emissions efficiently requires equalizing the marginal costs of reduction between countries. The apparently large differentials between the costs of reducing emissions in industrial and develop-

ing countries implies a great potential for lowering the costs of reducing emissions by focusing on projects in developing countries.

Most proposals for joint implementation of energy projects emphasize installing more technically efficient capital equipment, to allow reductions in energy use for any given mix of input and output. But such increases in efficiency are likely to have potentially important second-round impacts:

- Lowering the relative effective price of specific energy products.
- Lowering the price of energy relative to other inputs.
- Lowering the price of energy-intensive products relative to other products.

Martin explores the consequences of these second-round impacts and suggests ways to deal with them in practical joint-implementation projects.

For example, the direct impact of reducing the effective price of a fuel is to increase consumption of that fuel. Generally, substitution effects also reduce the use of other fuels, and the emissions generated from them.

If the fuel whose efficiency is being improved is already the least emission-intensive, the combined impact of these price effects is most likely to be favorable.

If the fuel whose efficiency is being improved is initially the most emission-intensive, the combined impact of these price changes is less likely to be favorable and may even increase emissions.

In the example Martin uses, increase in coal use efficiency was completely ineffective in reducing emissions because it resulted in emission-intensive coal being substituted for less polluting oil and gas.

This paper — a product of Trade, Development Research Group — is part of a larger effort in the group to understand key links between trade and the environment. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The author may be contacted at [wmartin1@worldbank.org](mailto:wmartin1@worldbank.org). (26 pages)

### 2360. Corruption and the Composition of Foreign Direct Investment: Firm-Level Evidence

Beata K. Smarzynska and Shang-Jin Wei  
(June 2000)

*The extent of corruption in a host country affects a foreign direct investor's choice of investing through a joint venture or through a wholly owned subsidiary. Corruption reduces inward foreign investment and shifts the ownership structure toward joint ventures.*

Smarzynska and Wei study the impact of corruption in a host country on foreign investors' preference for a joint venture or a wholly owned subsidiary.

Their simple model highlights a basic tradeoff in using local partners. On the one hand, corruption makes the local bureaucracy less transparent and increases the value of using a local partner to cut through the bureaucratic maze.

On the other hand, corruption decreases the effective protection of an investor's intangible assets and reduces the probability that disputes between foreign and domestic partners will be adjudicated fairly, which reduces the value of having a local partner.

As the investor's technological sophistication increases, so does the importance of protecting intangible assets, which tilts the preference away from joint ventures in a corrupt country.

Empirical tests of this hypothesis on firm-level data show that corruption reduces inward foreign direct investment and shifts the ownership structure toward joint ventures. Conditional on foreign direct investment taking place, an increase in corruption from the level found in Hungary to that found in Azerbaijan decreases the probability of a wholly owned subsidiary by 10 to 20 percent. Technologically more advanced firms are less likely to engage in joint ventures, however.

Smarzynska and Wei find support for the view that U.S. firms are more averse to joint ventures in corrupt countries than are other foreign investors — possibly because of the U.S. Foreign Corrupt Practices Act, which stipulates penalties for executives of U.S. companies whose employees or local partners engage in paying bribes.

But although U.S. companies are more likely than investors from other countries to retain full ownership of firms in corrupt

countries, they are not less likely than firms from other countries to undertake foreign direct investment in those countries.

This paper — a joint product of Trade and Public Economics, Development Research Group — is part of a larger effort in the group to study the effects of corruption on economic activity. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [bsmarzynska@worldbank.org](mailto:bsmarzynska@worldbank.org) or [swei@worldbank.org](mailto:swei@worldbank.org). (23 pages)

### 2361. The Welfare Effects of Private Sector Participation in Guinea's Urban Water Supply

George Clarke, Claude Ménard,  
and Ana Maria Zuluaga  
(June 2000)

*Private sector participation in Guinea's urban water sector has benefited consumers, the government, and, to a lesser extent, the new foreign owners. Performance will improve further when the government starts paying its own water bill on time and when the legislature authorizes the collection of unpaid bills from private consumers.*

In 1989 the government of Guinea enacted far-reaching reform of its water sector, which had been dominated by a poorly run public agency. The government signed a lease contract for operations and maintenance with a private operator, making a separate public enterprise responsible for ownership of assets and investment. Although based on a successful model that had operated in Côte d'Ivoire for nearly 30 years, the reform had many highly innovative features.

It is being transplanted to several other developing countries, so Clarke, Ménard, and Zuluaga evaluate its successes and failures in the early years of reform. They present standard performance measures and results from a cost-benefit analysis to assess reform's net effect on various stakeholders in the sector.

They conclude that, compared with what might have been expected under

continued public ownership, reform benefited consumers, the government, and, to a lesser extent, the foreign owners or the private operator.

Most sector performance indicators improved, but some problems remain. The three most troublesome areas are water that is unaccounted for (there are many illegal connections and the quality of infrastructure is poor), poor collection rates, and high prices.

The weak institutional environment makes it difficult to improve collection rates, but the government could take some steps to correct the problem. To begin with, it could pay its own bills on time. Also, the legislature could authorize the collection of unpaid bills from private individuals.

This paper — a joint product of Public Economics and Regulation and Competition Policy, Development Research Group — is part of a larger effort in the group to promote competition and private sector development. The study was funded by the Bank's Research Support Budget under the research project "Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply" (RPO 681-87). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [gclarke@worldbank.org](mailto:gclarke@worldbank.org) or [menard@univ-paris1.fr](mailto:menard@univ-paris1.fr). (40 pages)

### **2362. A Transitory Regime Water Supply in Conakry, Guinea**

Claude Ménard and George Clarke  
(June 2000)

*In several ways, the reform introduced to the water sector in Conakry, Guinea, in 1989 under a World Bank-led project was remarkable. It showed that even in a weak institutional environment, where contracts are hard to enforce and political interference is common, private sector participation can improve sector performance. Why did the sector improve as much as it did, and what has inhibited reform?*

Both consumers and the government benefited from reform of the water system in

Conakry, Guinea, whose deterioration since independence had become critical by the mid-1980s. Less than 40 percent of Conakry's population had access to piped water — low even by regional standards — and service was intermittent, at best, for the few who had connections. The public agency in charge of the sector was inefficient, overstuffed, and virtually insolvent.

In several ways, the reform introduced to the sector in 1989 under a World Bank-led project was remarkable. It showed that even in a weak institutional environment, where contracts are hard to enforce and political interference is common, private sector participation can improve sector performance.

Ménard and Clarke discuss the mechanisms that made progress possible and identify factors that inhibit the positive effects of reform.

Water has become very expensive, the number of connections has increased very slowly, and conflicts have developed between SEEG (the private operator) and SONEG (the state agency). Among the underlying problems:

- The lack of strong, stable institutions.
- The lack of an independent agency capable of restraining arbitrary government action, regulating the private operator, and enforcing contractual arrangements.
- The lack of adequate conflict resolution mechanisms for contract disputes.
- Weak administrative capacity.

This paper — a joint product of Public Economics and Regulation and Competition Policy, Development Research Group — is part of a larger effort in the group to promote competition and private sector development. The study was funded by the Bank's Research Support Budget under the research project "Institutions, Politics, and Contracts: Private Sector Participation in Urban Water Supply" (RPO 681-87). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at [www.worldbank.org/research/workingpapers](http://www.worldbank.org/research/workingpapers). The authors may be contacted at [menard@univ-paris1.fr](mailto:menard@univ-paris1.fr) or [gclarke@worldbank.org](mailto:gclarke@worldbank.org). (52 pages)